VOLUME LVII NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

JUNE, 1930

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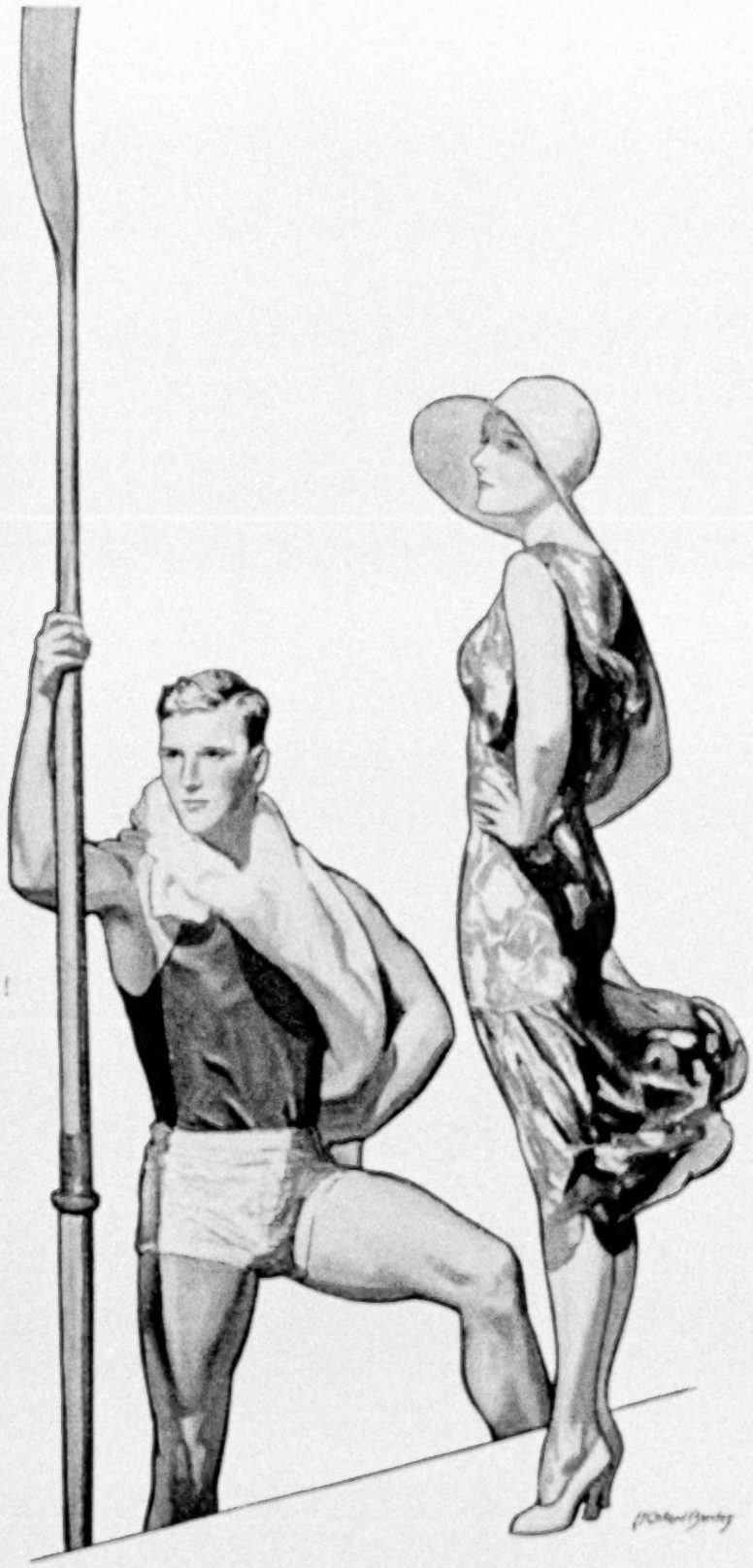

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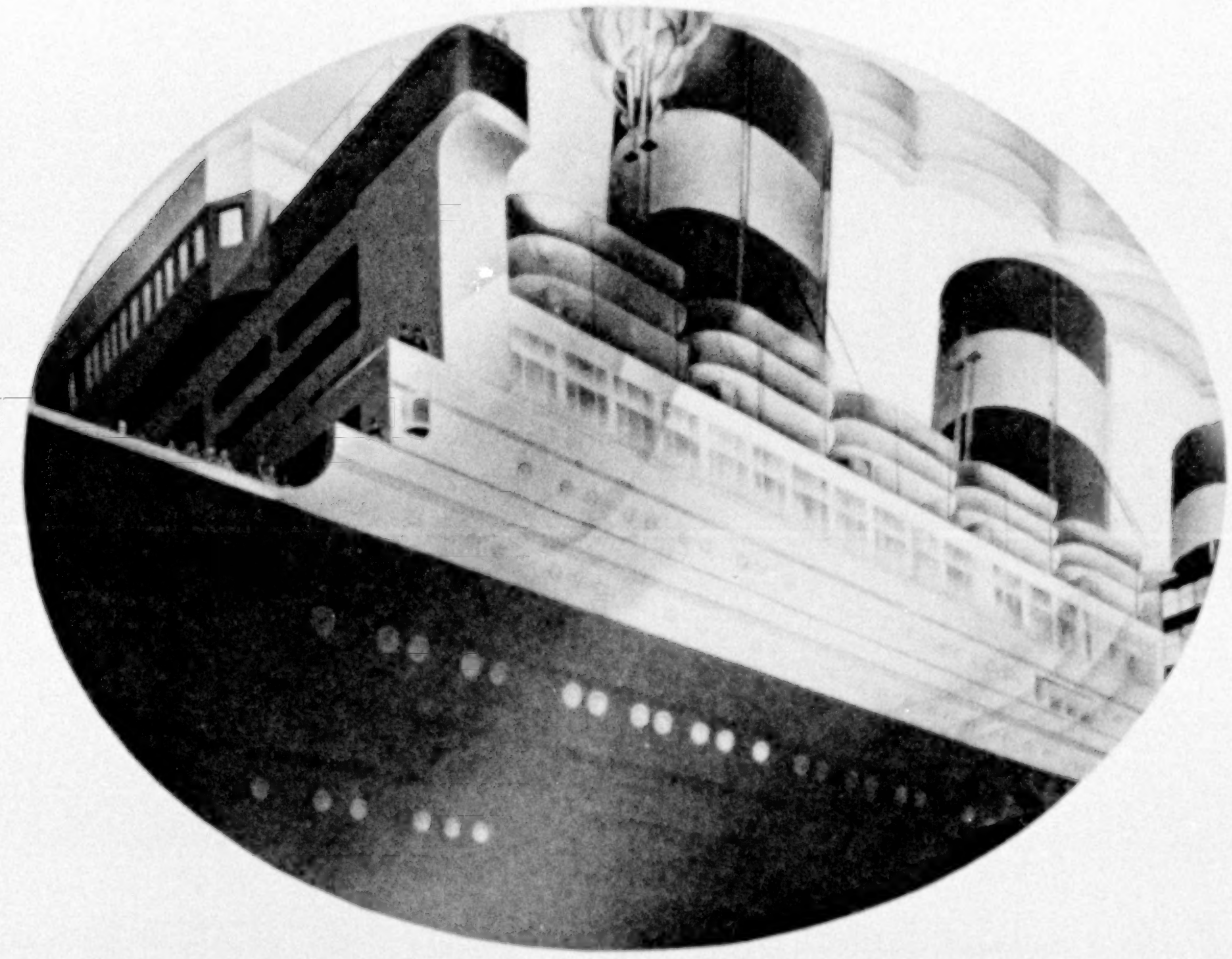

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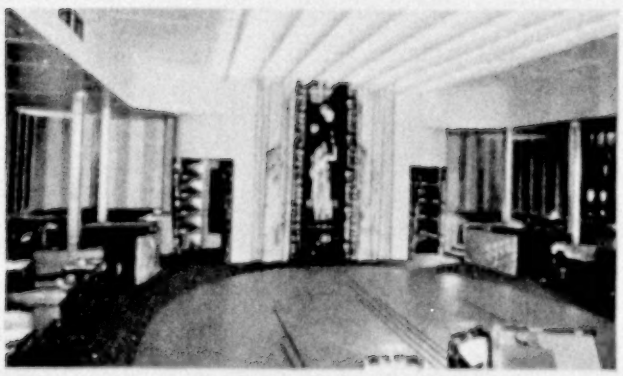

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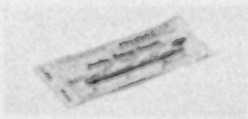

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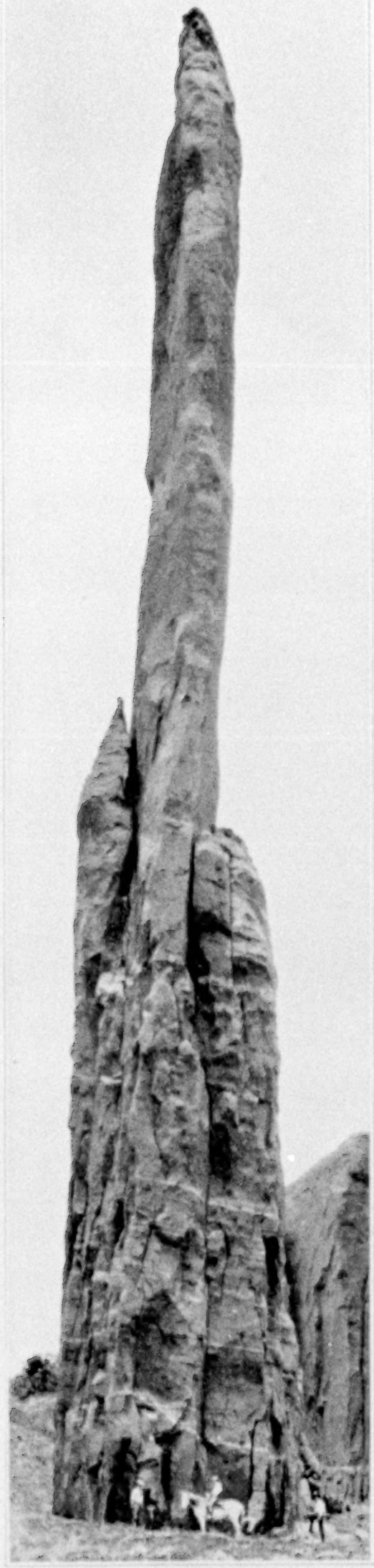

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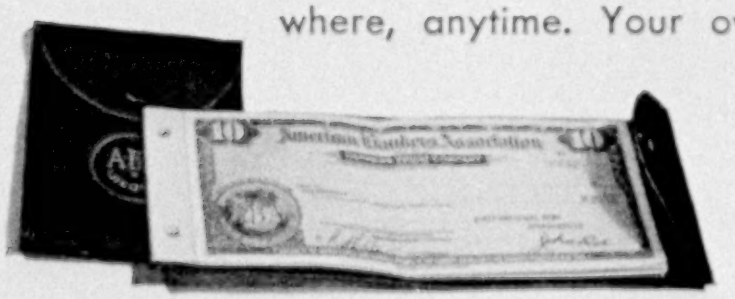

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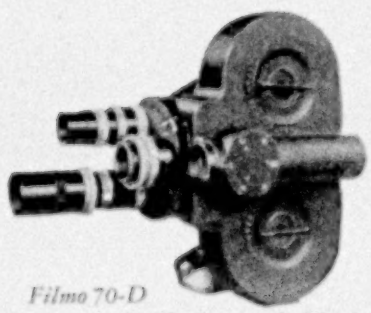

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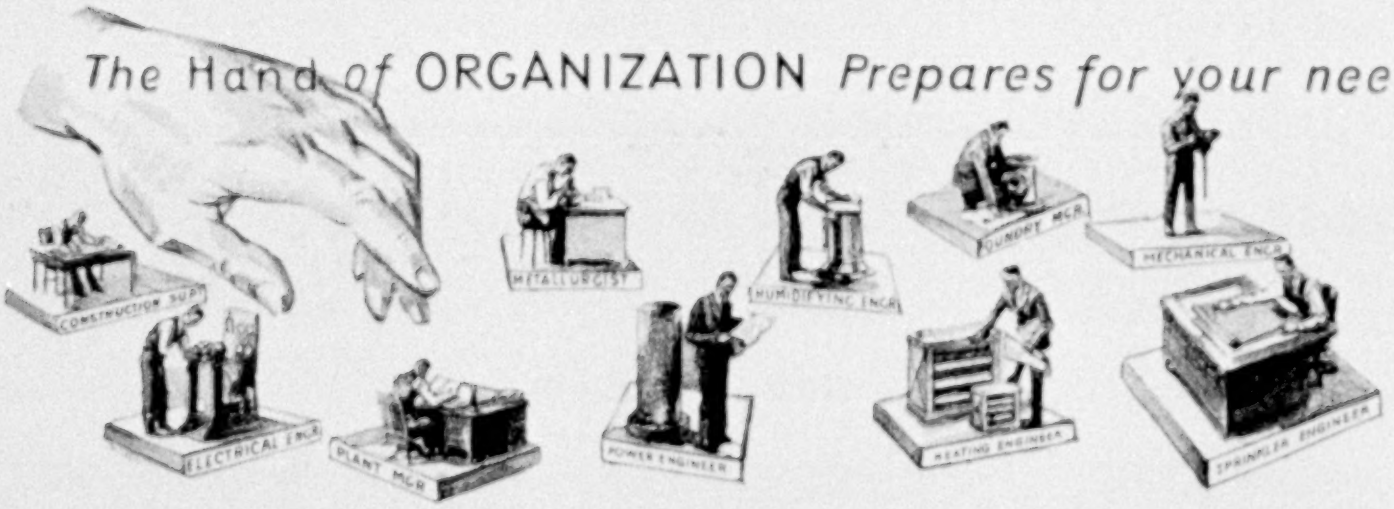

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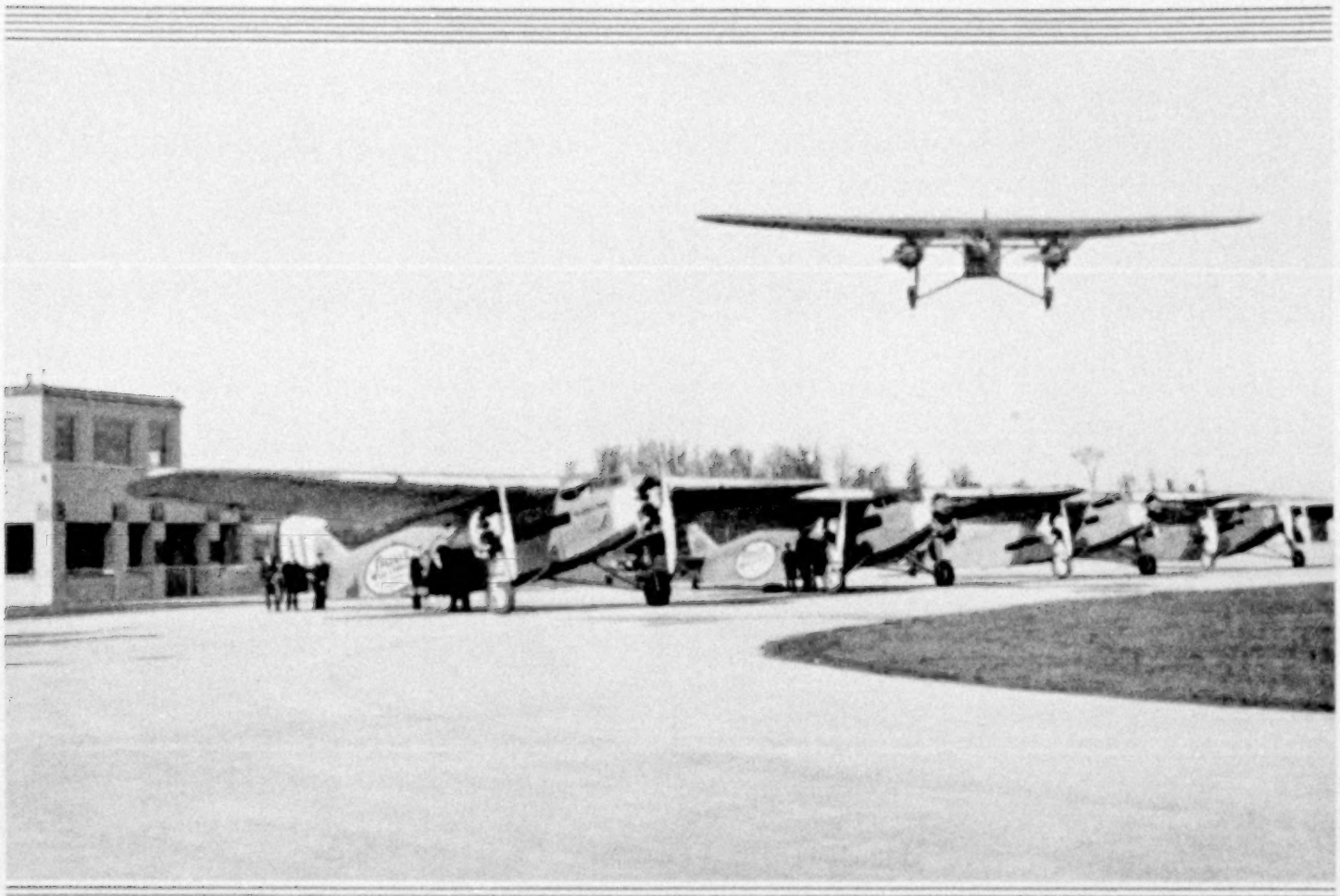
STOUT AIR LINES!



On scheduled service Ford planes frequently fly in two or more sections to meet the demand for swift, comfortable transportation

ALMOST incredible is the achievement of Stout Air Lines, operating the Detroit-Chicago-Cleveland routes. Up to the end of 1929, well over a hundred thousand passengers had been carried eight hundred and forty thousand miles without the slightest injury to a passenger, and with an extraordinary record both for reliability and the percentage of scheduled trips completed! *Ford all-metal, tri-motored transports only are used on these lines.*

The first operating route of Stout Air Lines was between Detroit and Grand Rapids, beginning in August, 1926, using Ford Liberty motored ships. Since then new lines have been opened . . . schedules extended . . . rates cut almost in half!

Four round trips a day are flown between Detroit, Toledo and Cleveland. One way fare is $10. Two round trips daily are flown between Chicago and Detroit, one way fare being $18. On this route stops are made at Battle Creek, Kalamazoo and South Bend. The demand for passage on these lines is so great that on one occasion, at least, it was necessary to run eleven sections of Ford tri-motored, all-metal transport planes.

Ford planes are used on these lines with the steady dependability of trains and busses. They are recognized by every one as a permanent form of swift transportation between the great cities which they serve.

FORD MOTOR COMPANY

Visitors are always welcome at the Ford Airport at Detroit

The Ford Plane

The Ford plane is planned, constructed and operated as a commercial plane. Built of corrugated aluminum alloys, it has great structural strength, unequaled durability, and is most economical to maintain in operation. The uniformity of its material is determined by scientific test. All planes have three motors in order to insure reserve power to meet and overcome all emergencies. The engines may be Wright or Pratt & Whitney, air-cooled, totaling from 900 to 1275 horse-power. Ford planes have a cruising range of from 580 to 650 miles and a speed range of from 55 to 135 miles per hour. Loads may be carried weighing from 3670 to 6000 pounds.

The capacity of these planes is 13 to 15 passengers and a crew of two (pilot and assistant). Planes can be equipped with a buffet, toilet, running water, electric lights, adjustable chairs.

The price of the Ford tri-motored, all-metal plane is exceptionally low because of its highly scientific methods of commercial production. Price is $40,000 to $50,000 at Dearborn.

Ford branches will be glad to give you information on the Ford tri-motored, all-metal plane in all models.

Originated by
Geo. H. Wheary

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LUGGAGE
INVENTION
for Women

IN Aviatrix, Geo. H. Wheary, foremost inventor of modernized luggage, provides for every travel need of the modern woman. Ingenious Dress-Holder packs 6 to 10 dresses *without wrinkles.* Ample space, also, for shoes, hats, lingerie, toilet articles, etc. Most ingenious travel case you've seen—and the most practical. The Dress-Holder not only protects dresses enroute but allows you to get at articles in body of case without mussing your dresses. Four practical sizes; variety of covering materials, including fine domestic and imported leathers. $10 to $100, at most better shops and stores.

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describing modernized luggage will be sent you on request.

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Company
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Racine, Wis.
295 Fifth Ave.
New York, N. Y.

Around South America CRUISE

71 Days! 17,402 Miles! *And upwards of 40 ports, cities and points of special interest! Sailing from Los Angeles, October 8, 1930, on the—*

"CITY of LOS ANGELES"

(22,500-ton Flagship of LASSCO'S Los Angeles-Hawaii Fleet)

CRUISER de LUXE!—Your "home" for this fascinating cruise is a splendidly appointed liner, specially fitted for service in the tropics! All staterooms are outside, all have FRESH running water, hot and cold, and over 70% have private or connecting bath. Outdoor swimming pool with sand beach—grand dining saloon accommodating entire cruise party at one sitting. The itinerary includes:

Los Angeles, Calif.—Balboa, connecting here with steamers from New York and New Orleans—Salaverry, Callao, Lima, Mollendo, (Peru)—Arica, Antofagasta, Valparaiso, Santiago, Coronel, Punta Arenas, (Chile)—Buenos Aires, (Argentina)—Montevideo, (Uruguay)—Santos, Sao Paulo, Rio de Janeiro, Bahia, (Brazil)—Trinidad, B.W.I.—La Guaira, Caracas, (Venezuela)—Cristobal, Balboa, (Panama)—La Libertad, San Salvador, (Salvador)—Mazatlan, (Mexico)—Los Angeles—a complete cruise at the ideal season—spring in these fascinating lands!

Tour cost from $1050 to $4500 includes comprehensive program of shore excursions under management of an accompanying AMERICAN EXPRESS cruise staff. For full particulars, apply any authorized agent, any office of the AMERICAN EXPRESS, or—

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What a Proof
of efficiency and economy!

For our illustrated booklet address Section R-6, Electric Refrigeration Department of General Electric Company, Hanna Building, Cleveland, O.

Not ONE owner has ever paid a cent for service.

What a Proof
of Trouble-free Operation!

In a dramatic test to demonstrate the trouble-free operation of General Electric Refrigerators, the entire mechanism was submerged in water—and it still ran on!

What a Proof
of Durability!

In General Electric Laboratories, tests were conducted to discover the durability of the doors, latches and hinges. The tests were stopped after a period equivalent to 30 years of wear!

What a Proof
of Reliability!

The General Electric automatic freezing control was tested every ½ minute for a period equivalent to 465 years. At the end of that time, it was still going strong!

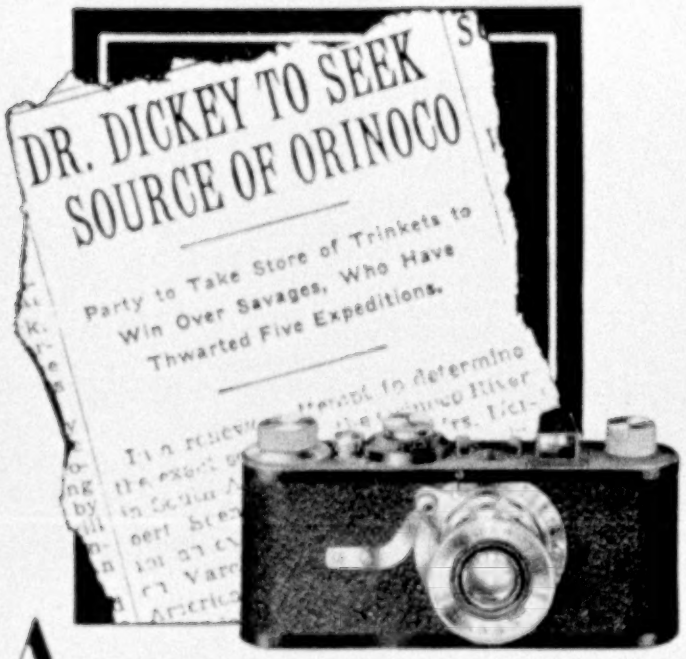
Not a cent paid for service by a single owner. What a proof that the refrigerator which costs you less to own is the General Electric! What a proof that the Monitor Top —that small round casing on every General Electric Refrigerator—is your unfailing safeguard against trouble, worry and expense. In the Monitor Top the entire mechanism, with a *permanent* oil supply, is *sealed* in steel, so that moisture, dirt, rust and trouble can *never* get inside. Operation cost is but a few cents a day. And not *one* owner has ever paid a cent for service. What a proof of General Electric economy!

Prices start as low as $205 at the factory —and most people buy on our easy time payment plan. What a proof that any family now can own a General Electric.

Join us in the General Electric Hour, broadcast every Saturday Evening on a nation-wide N.B.C. network

GENERAL ELECTRIC

ALL-STEEL REFRIGERATOR



ANOTHER FAMOUS EXPLORER CHOOSES THE LEICA CAMERA

BECAUSE of its compactness and unfailing service on an instant's notice, Leica, the universal camera, was the choice of Dr. Dickey when he and his party started into South America to find the unexplored watershed of the Orinoco River.

Invariably this remarkable camera is the companion of explorers, scientists, professional photographers and amateurs who recognize superlative camera quality. Several Leicas are owned by members of the Byrd Antarctic Expedition. Others were taken on the Graf Zeppelin's World Cruise, the Greenland Expedition, through the Carlsbad Caves and on the transcontinental Glider Flight of Capt. Hawks, sponsored by the Texas Company.

If you want better pictures under all conditions of light and weather, carry a Leica wherever you go. It fits the vest pocket or purse—and weighs less than a pound. Yet it is marvelously perfect mechanically and optically. Takes 36 pictures on a single roll of standard cinema film, double-frame size. And enlargements to 12 x 18 inches or more preserve and accentuate all detail. The ideal camera for snapshots, sport pictures, etc. See it now at your dealer's or write for Catalog 1174. E. Leitz, Inc., 60 East 10th Street, New York, N. Y.

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Please send Catalog 1174, showing Leica Camera.

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THIS year plan a *restful* vacation . . . a D & C voyage on the cool Great Lakes.

You'll enjoy attractive ports of summer pleasure . . . Buffalo and Niagara Falls . . . Mackinac Island and St. Ignace . . . Cleveland . . . Chicago . . . Detroit.

You'll feel relaxed and freshened in that sparkling Great Lakes air! And the happy, luxurious hours spent on steamers of the D & C fleet will long remain in your memory.

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3 SAILINGS WEEKLY
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Detroit-Chicago	$31	$52.50
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DETROIT & CLEVELAND NAVIGATION COMPANY

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World's Fastest Freezing

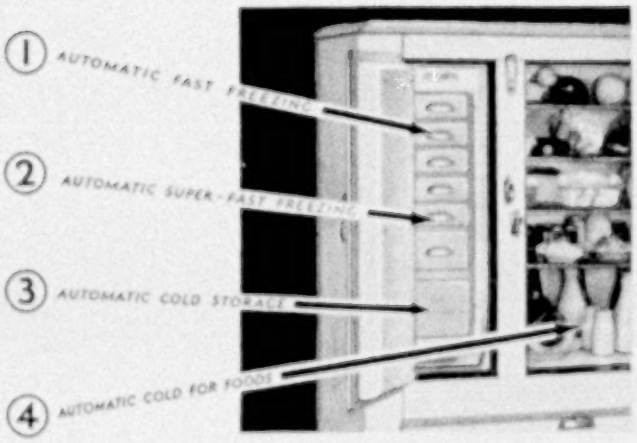
Proved in Nation-Wide Test

IN a recent country-wide test, every state in the union reported that the new Super-Automatic Kelvinator froze water to solid ice in the amazing average freezing time of 80 minutes.

Super-fast freezing of this type is due to Iso-Thermic Tubes—an exclusive Kelvinator device which cuts the freezing time for ice and desserts from one-half to one-third the usual period.

The 4-Way Cold Kelvinator includes many exclusive advantages. It is entirely *automatic*. It provides fast freezing in all ice trays, with super-fast freezing in a special compartment. One food compartment is for Cold Storage of frozen meats, fruits, game, etc. In this compartment the cold is always *below freezing*. In the main food compartment, scientific cold below 50 degrees is always maintained.

If you want the best in electric refrigeration — the most basic advancements ever made in this great home utility — be sure to see the new Super-Automatic Kelvinators at your earliest opportunity.



Free illustrated folder describing the complete new Kelvinator line will be mailed upon request

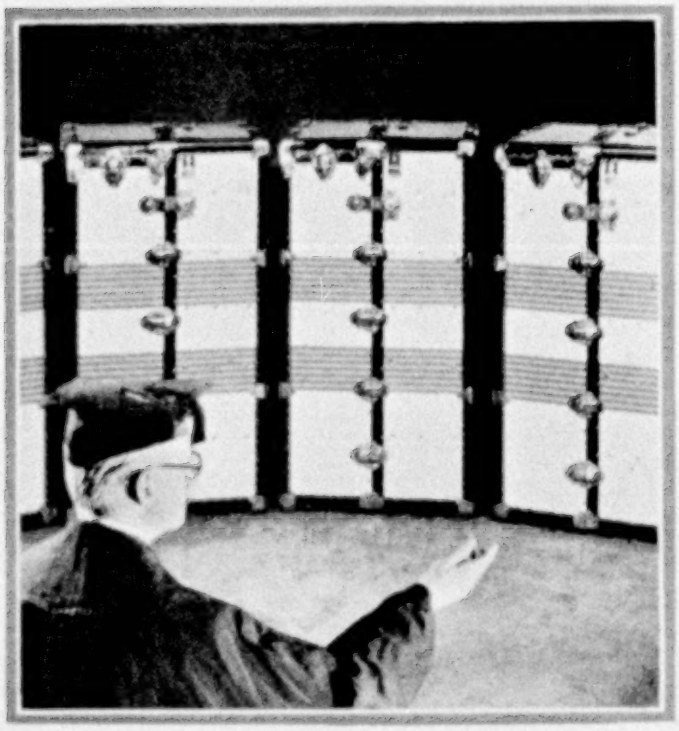
Kelvinator Corporation, 14258 Plymouth Road
Detroit, Michigan

Kelvinator of Canada, Limited, London, Ontario
Kelvinator Limited, London, England

THE 4 way cold KELVINATOR

THE ELECTRIC REFRIGERATOR

OSHKOSH TRUNKS



Every day is Graduation Day in Oshkosh

EVERY time a carload of trunks rolls away from the shipping room, we feel like a college president at graduation exercises. We can't help thinking a speech, even though we don't say it:

"Now you are going out into the wide, wide world. You will receive hard knocks. Burden and responsibility will be thrust upon you. You are better equipped to be of service in the world than most of your fellows. Be helpful in every way you can, and above all remember that you have a duty to perform in always upholding the honor and reputation of dear old Oshkosh."

And in one respect we have a comfortable advantage over most college presidents. We *know* that every one of our graduates is going to be an unqualified success.

A descriptive booklet, "Your Home Away From Home," will be sent on request. Address the Oshkosh Trunk Company, 465 High Street, Oshkosh, Wisconsin.

Cruise to Europe via

MIDNIGHT SUN LAND

The perfect beginning of a summer abroad. Sails June 28 to Iceland, North Cape, Norway's Fjords, Denmark, Visby, Sweden, Danzig, Scotland—also to ports most convenient for continuation travel in Russia, Germany, France, England, etc. The splendid *S. S. Calgaric* has been specially chartered from the White Star Line. Rates, first class only, from $550, cover all necessary expenses, including shore trips and stopover return ticket. Membership limited to 480.

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Sailings weekly; rates $500 up, all expenses.

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TO DEFTLY SERVE YOUR SOCIAL AND SPORTING NEEDS AFLOAT . . . . . .

BRISTLING with dignity, beautiful to look upon, elegant to ride in, swift as the wind and safe as an ocean liner, the four Robinson Seagull sport cruisers and commuters are unsurpassed for riding ease and driving excellence. Cabin interiors present an alluring picture of cruising luxury. Pullman berths urge you to try their tangible comforts at night. For a summer cruise, for week-end outings, for daily commuting, a Seagull will serve you with inimitable distinction and rare performance. Write for the illustrated catalogue or visit our modern plant.

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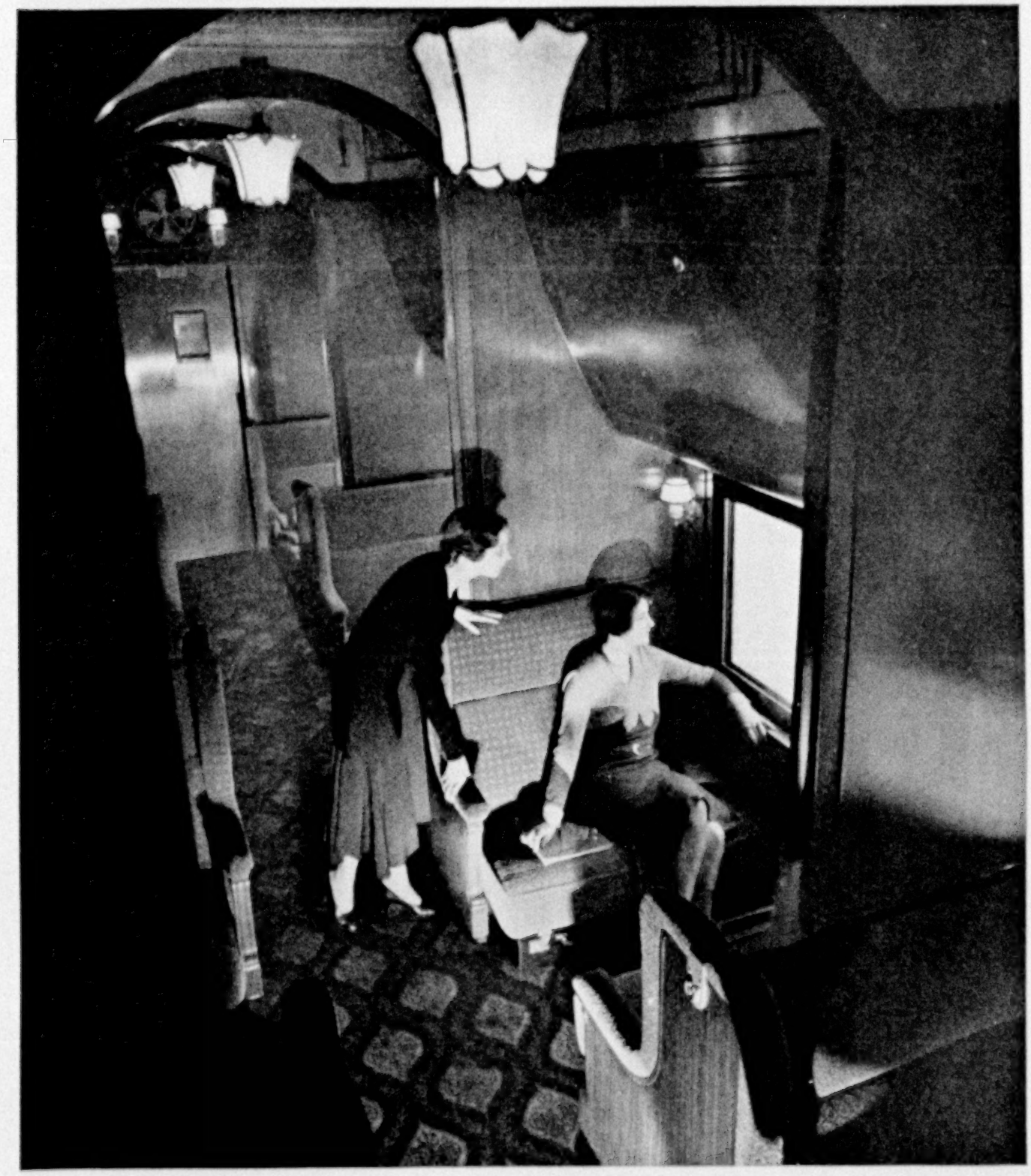
ROBINSON Seagull CRUISERS

New North Coast Limiteds



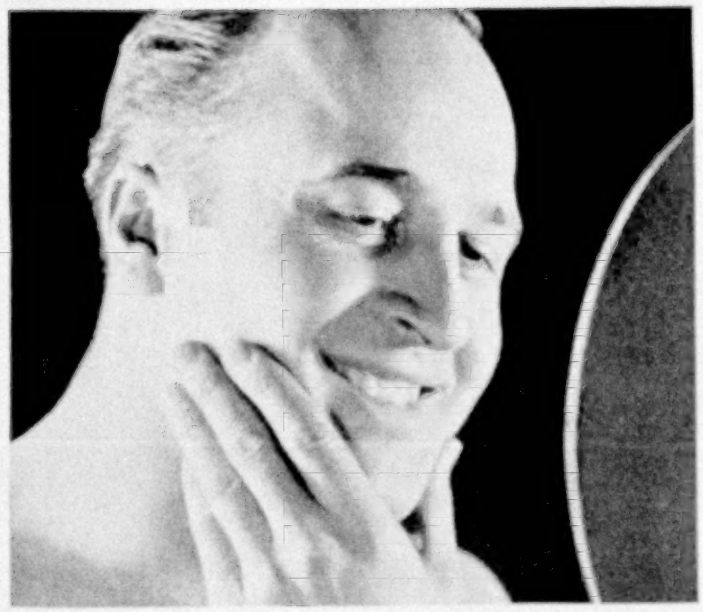
This Spring, the newest and most luxurious of railroad passenger equipment enters service of the

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

737

North Coast Limiteds for the satisfaction of travelers between Chicago and the Northern Pacific Coast.

For Western travel information, address
E. E. Nelson, 269 N. P. Bldg., St. Paul, Minn.



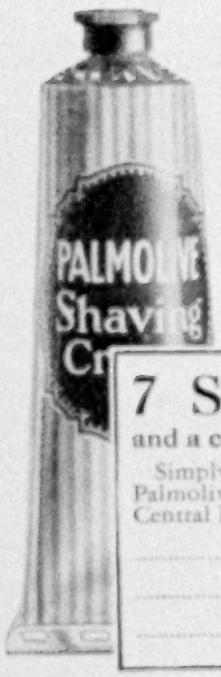
WANTED men with tough beards

To learn, at our expense, a new shaving method that brings 5 new comforts. 86% of those who try it never go back to old ways.

GENTLEMEN: This is a direct challenge to men who are hard to shave. Men whose stiff, stubbly beards make shaving a hardship. Who, in getting a close shave, leave the skin irritated and burning. For these men we have a message . . . and a challenge.

If you will mail the coupon below we will show you that shaving troubles are unnecessary. For Palmolive Shaving Cream, now used daily by 86% of all the men who ever tried it, is the answer to your prayer.

A 7-day test will convince you better than any words of ours.



PALMOLIVE RADIO HOUR—Broadcast every Wednesday night—over WEAF and 39 stations associated with The National Broadcasting Co. 6888

7 SHAVES FREE

and a can of Palmolive After Shaving Talc

Simply insert your name and address and mail to Palmolive, Dept. M-848, P. O. Box 375, Grand Central Post Office, New York City.

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Saigon . . . the Paris of the Orient . . . sidewalk cafes, luxuriant parks, magnificent boulevards and private homes, race courses, golf club . . . all around you foliage of incredible tropic brilliance. Vivid green paddy fields streak past the wheels of your car . . . beyond the great Cambodian Jungle, ever-mysterious. Just one of the glorious bundles of memories you'll gather on this Cruise.

A great ship splendidly equipped . . . a prodigious itinerary . . . every comfort aboard . . . intriguing days ashore . . . the world-famed Cunard menus and service . . . and back of it all the co-operation of Cunard and Cook's with their 179 years of experience and tradition.

Make this your World Cruise . . . the cost is surprisingly low.

Sailing Westward from New York Dec. 3; from Los Angeles Dec. 19; from San Francisco Dec. 21 . . . Back in New York April 12.

Also Eastward Around the World in the Franconia from New York Jan. 10

Literature and full information from your local agents or

CUNARD LINE
THOS COOK & SON

New Fountain Pen Desk Set Holds Pencil, Too

Both Convertible for Pocket and Desk

Pen Guaranteed for Life

Here is the newest and loveliest gift of all—for blushing bride or clear-eyed graduate—for birthdays, young and old, or anniversary.

Parker Fountain Pens and Pencils—in breath-taking beauty of color—now come in combination sets for desk or pocket, for the first time.

And both pen and pencil—also for the first time—are *convertible* for instant pocket or Desk Set use by merely changing caps for tapered tip, or reverse.

When you get the desk base—either now or later—you get included, the graceful tapered ends you need for desk use. You also get the gold-trimmed pocket caps with clip for pocket use. Thus you get *double duty* from the pen that is Guaranteed for Lite.

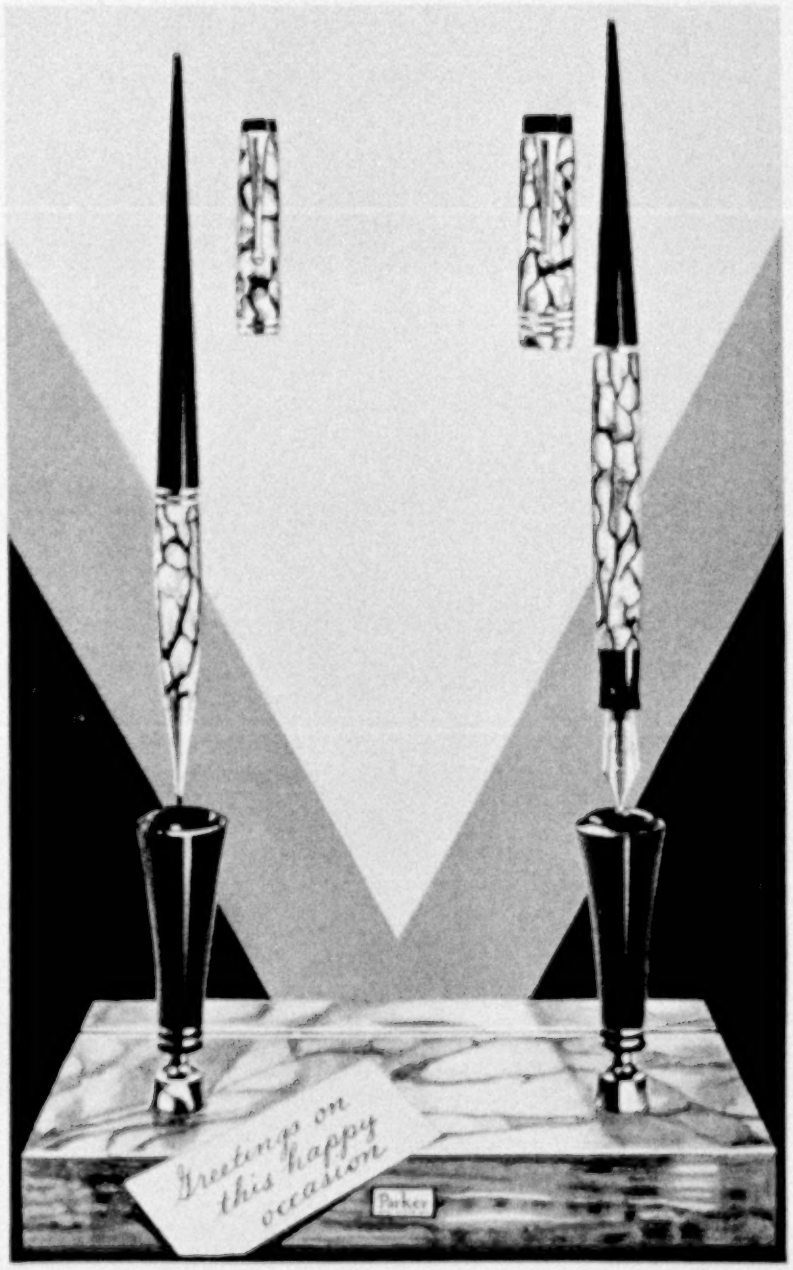
Pen Guaranteed for Life

The famous Parker Pressureless Touch—Non-breakable barrels—17.4% greater ink capacity, size for size—Parker's Guarantee for Life—these important features, exclusive in Parker, settle all doubts as to choice.

Parker streamlined pens and pencils come in matched pairs—with or without Desk Bases. In mandarin yellow, jewel-like jade, lacquer red, jet-like black-and-gold, lapis lazuli blue . . . and in de luxe black-and-pearl, newest color of all.

Select your gift from the wide range at any fountain pen counter. Look for the imprint "Geo. S. Parker—DUOFOLD" on the pen barrel—your Guarantee for Life. Pens, $5 to $10. Pencils to match, $3.25 to $5. Bases, $4 and up.

THE PARKER PEN COMPANY, Janesville, Wis.



JUNE GIFTS—*Graduations—Birthdays—Weddings—Anniversaries*

Duofold Senior black-and-pearl convertible Pen and Pencil with polished onyx Base, $26. With Duofold Junior Pen and Pencil, $23.50.

Something NEW

"Vest-Parker" Pens—Guaranteed for Life—and Pencils to Match

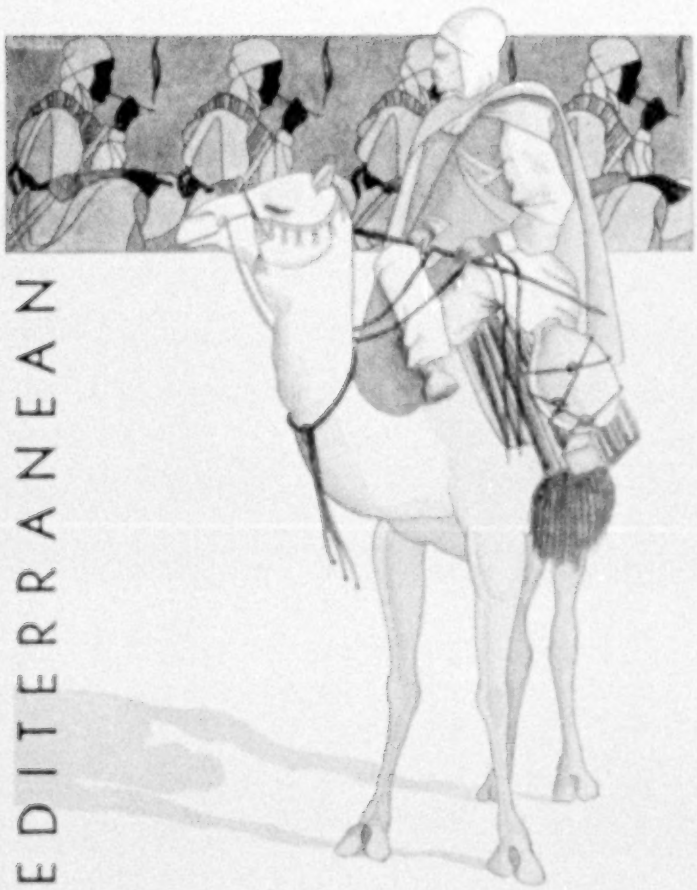
Midget Parker Duofolds—convertible for use in pocket or Desk Set. Cuddle comfortably in your hand when writing, snuggle unobtrusively in pocket like a latchkey. The pen $5, the pencil $2.50.

Parker *Duofold*

Parker Pressureless Touch

$5 $7 $10

PEN GUARANTEED FOR LIFE



MEDITERRANEAN

CRUISE SUPREME

Salaam Aleikum!

Greetings of an Orient dawn, when comes a breeze of the sea to rustle the palms, when pale desert shadows clothe the minarets of mosques, when the clear cool starlight darkness pausing, softly summons languorous day . . . Then a sudden blaze of glory spreading light and color everywhere, turbaned men and laden camels, aged streets again pulsate with life—the golden cloudless sun of the Ptolemys and Cleopatra once more smiles down upon Egypt.

Decide now to join the Eighth Homeric Mediterranean Cruise—to sunny domains of legend on The Ship of Splendor—the largest cruising steamer—a marvellously varied itinerary takes you to Morocco, Old Spain, Algeria, Egypt, Palestine, Turkey, Greece, Italy —the Riviera in its gayest season—the rarely visited Balearic Islands, Malta, Corsica and many other flower scented lands. Sailing from New York January 24.

Let us tell you more about the Homeric Cruise.

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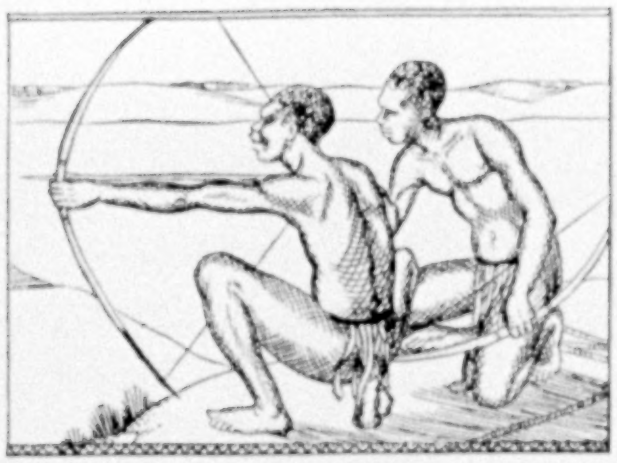


South African Bushmen

SOUTH AFRICA

"The fairest cape we saw in the whole circumference of the earth," wrote Sir Francis Drake in 1591. The great navigator was referring to the Cape of Good Hope.

Here is one of the picturesque gateways to that enchanting travel land---South Africa. Marvelously rich in majestic beauties, startling contrasts, thrilling historical associations, epic human achievement, South Africa is also world-famous as a sunlit playground and invigorating health resort.

No other land can parallel the complex witchery of this tourists' paradise---its glittering background of gold and diamonds, its amazingly varied flora and fauna, and its stupendous and beautiful waterfalls set in their inspiring environment of natural grandeur.

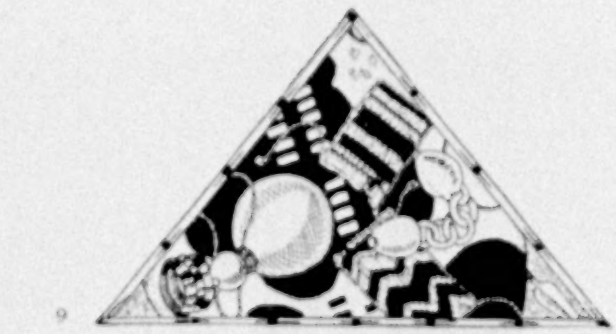
Wonderfully fascinating, too, are the unique tribal customs, ceremonies and legends of the Bantus, and the ancient ruins and colored rock paintings that remain as relics of the almost vanished race of Bushmen.

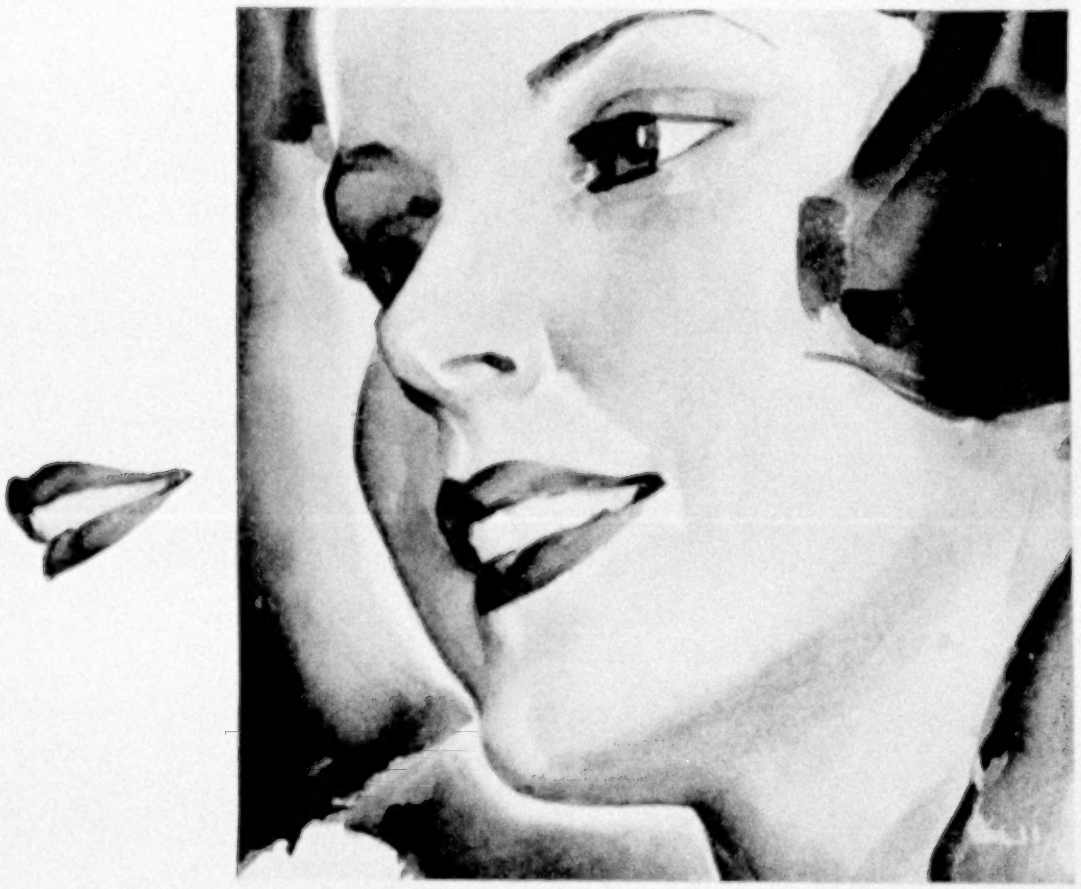
With all the luxuries of modern hotels and transportation, the traveler has ample opportunity to drink deep of the primeval spirit of Africa, and to feel its dark mystery and brilliant romance.

For information regarding special cruise or independent tours, send for Booklet OD-1 to Director

South Africa Travel Bureau

Room 657, 11 Broadway, New York City





Do you choose a dentifrice by a dentist's standards?

FOR many years, dentists have known the name of Forhan. They knew it first as the name of R. J. Forhan, D. D. S., who, in his practice, developed a preparation widely used by dentists as an aid in the treatment of pyorrhea.

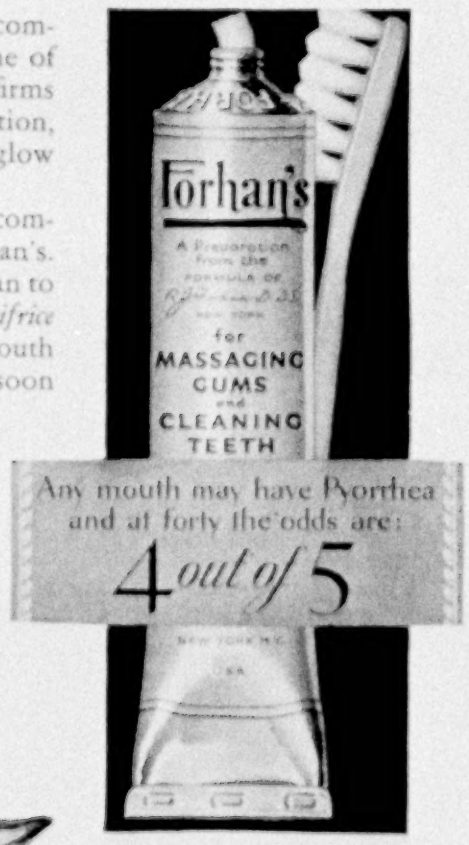
They knew it later as the name of a dentifrice, based upon the benefits of Dr. Forhan's preparation—a dentifrice originated by him to supplement the care which dentists gave to gums and teeth.

Naturally, this dentifrice is made according to a dentist's standards.

It contains safe and pure ingredients for cleansing the teeth. It combines, also, a special preparation long used by the dental profession in caring for the gums. When used as recommended with massage at the time of brushing, this dentifrice therefore firms up the gums, stimulates circulation, and helps to bring out the coral glow of tingling health.

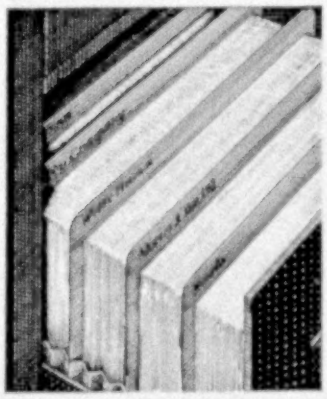
Do not wait until tender gums compel you to start the use of Forhan's. It is far better to avoid trouble than to treat it. Adopt the *dentists' dentifrice* which may help you keep the mouth of youth from becoming too soon *middle-aged.*

Forhan's for the gums comes in two sizes—35¢ and 60¢—a few cents a tube more than the ordinary toothpaste, and exceedingly well worth it. Forhan Company, Inc., New York.



Forhan's

YOUR TEETH ARE ONLY AS HEALTHY AS YOUR GUMS

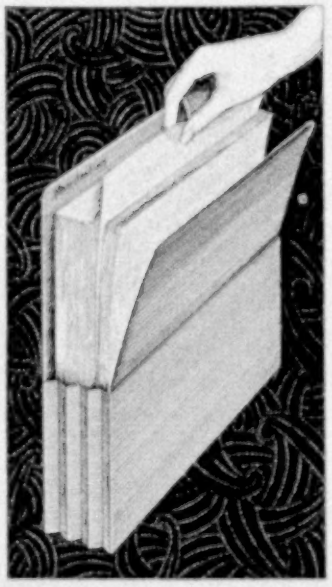


EVERY letter in its place, neatly and compactly held in a pocket that will expand as the papers increase. Every pocket erect in the cabinet. Every index tab in plain view.

Vertex

FILE POCKETS

are firm, durable, expansible filing containers that can be used in any vertical filing system. They are easy to remove or replace in the file, will hold three or three hundred letters with equal facility, and permit instant reference without entirely removing the pocket from the drawer or removing the letters from the pocket. Instant improvement in appearance and efficiency is the immediate result of their use.



A free sample file pocket will be sent to every user of vertical files. Use the coupon below.

----------COUPON----------

Please send me for trial in my files a free sample of the Bushnell Paperoid "VERTEX" File Pocket as described in June, 1930, NATIONAL GEOGRAPHIC.

Name of Firm.....

Address.....

Name and Position of Person Inquiring.....

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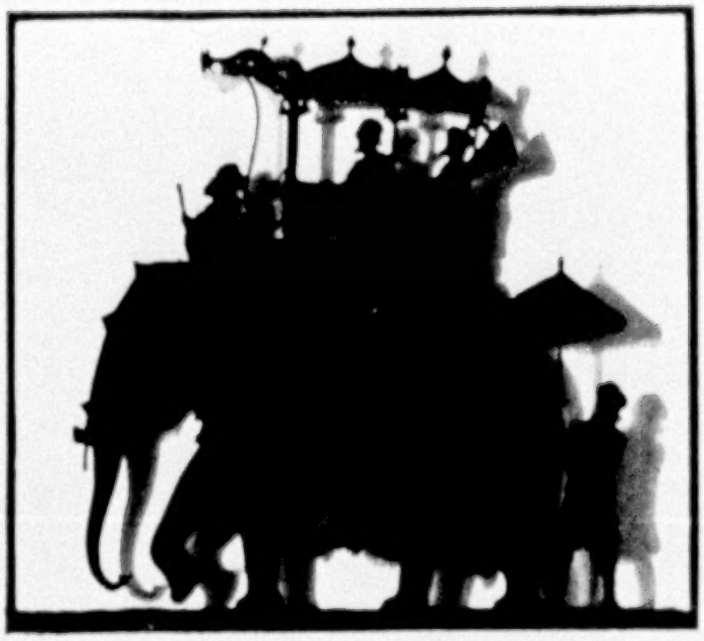
Letter Size or Legal Size Desired?.....

To ALVAH BUSHNELL CO.,
Dept. G
13th and Wood Streets Philadelphia, Pa.



Around the World Your Own Way!

There is a thrill forever in memories of old Kyoto with its winding streets where you can linger endlessly among curious bronzes, elaborate carvings, beautiful lacquers, rich Oriental silks. You will love Tokyo with its noted gardens and palaces, Nikko with its famous giant cryptomerias, Kamakura with its Temple of Hachiman and Great Daibutsu . . . the world's most renowned statue of Buddha.

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Says Douglas Fairbanks, Jr.

"Shaving with Barbasol is indeed a pleasure. No brush. No lather. Just Barbasol and a trusty blade... and the shave is quick and comfortable."

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** Barbasol testimonials are not paid for.*

WHY do men write Barbasol letters bursting with praise of this modern shaving cream? It must be genuine enthusiasm, because their shouts of joy over this easy, quick, *clean* shave are *voluntary.*

Listen to this: "I'd rather drive an auto without a self-starter than go back to the old shaving brush"—W.E.L., of New York. "Wonderful results . . . the smooth and clean shave from Barbasol"—M. W., of New Jersey. "I have a tough beard, but with Barbasol the razor doesn't pull"—N. R. G., of California. (Yes, names on request if you like.)

YOU can join the crowd of Barbasol believers and get the shaving surprise of your life, *but* you must follow these directions. At that, *you'll be following along with the crowd.* Here they are:

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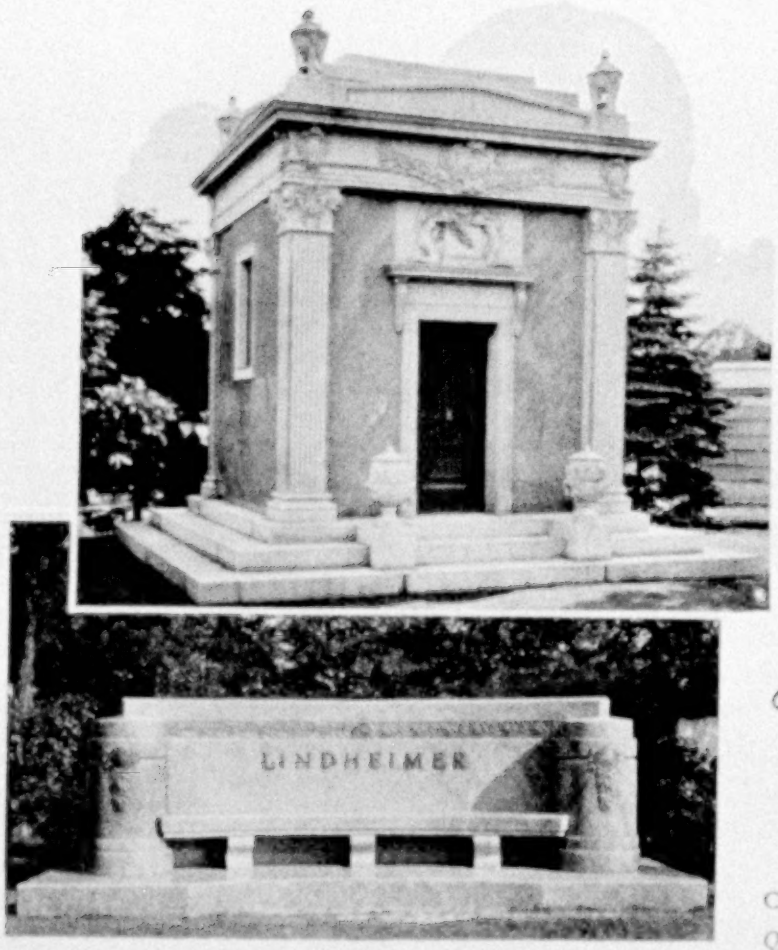
No brushing — No lathering — No rubbing



Above: Renaissance Architecture furnishes the decorative motif for this unusual Mausoleum, built entirely of Stony Creek Granite, in Woodlawn Cemetery, New York City.

Below: A distinctive Exedra Memorial in Rose Hill Cemetery, Chicago, made of Stony Creek Granite highly polished. Lettering and ornamentation of bronze.

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BY

Joseph H. Dodson

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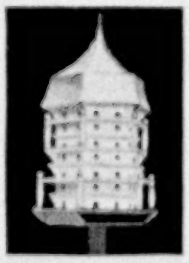

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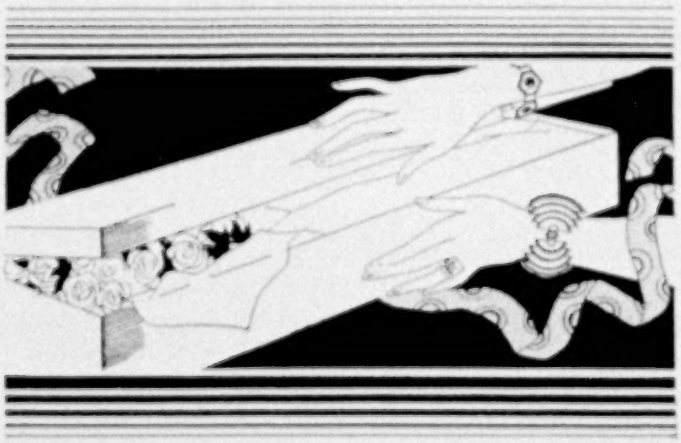

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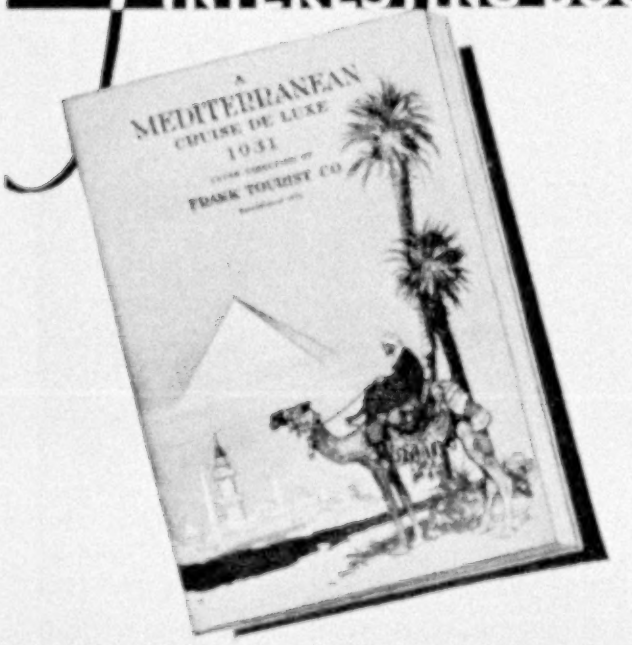

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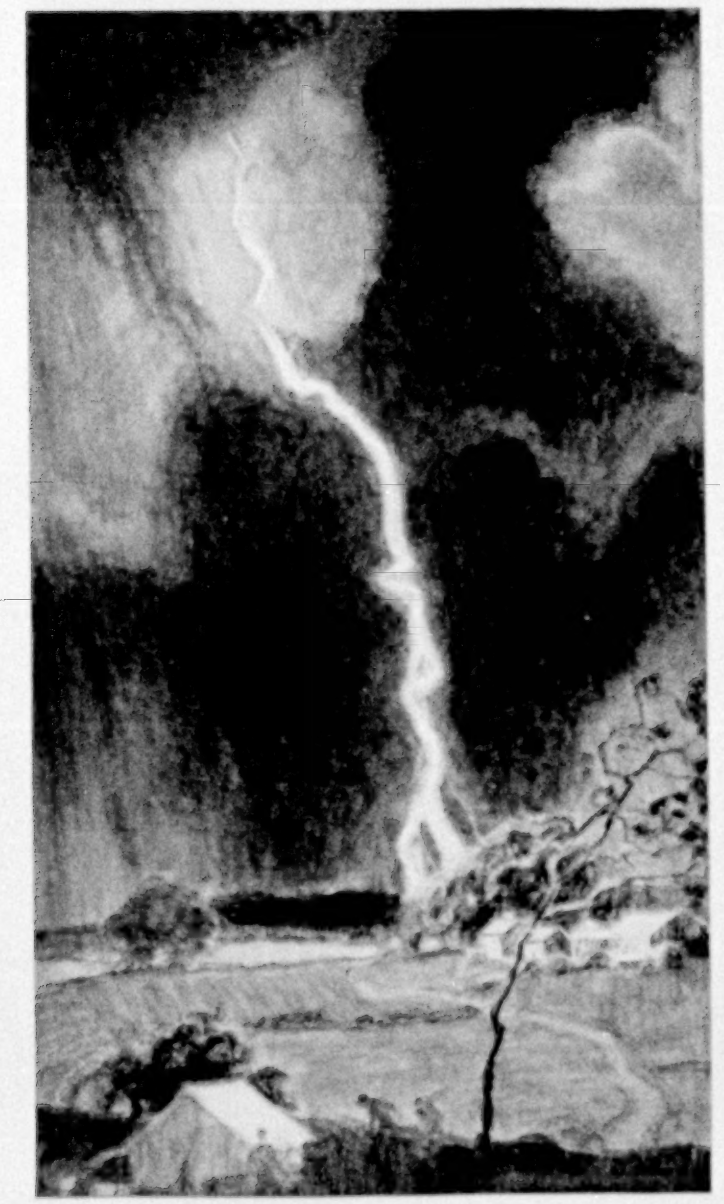

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WHEN lightning flashes and thunder roars, timid folk are often frankly scared and even the most stout-hearted are awed. They can see the threatening danger against which they are helpless. Yet most of these very people ignore an unseen danger against which they can protect themselves. It is typhoid fever, and it costs twenty times more lives than lightning.

Typhoid kills one out of every ten attacked. Those who recover are left in such a weakened condition that for two or three years following an attack, the deathrate among them is twice the normal rate. Sometimes typhoid leaves after-effects from which the patient never recovers.

Most cases of typhoid are contracted by people away from home—touring, hiking, camping, traveling. The disease is caused by eating or drinking something contaminated by typhoid germs. Water that tastes delicious and looks crystal clear, or raw milk and uncooked foods may carry the disease. If you swallow enough typhoid germs and are not immunized, typhoid fever is almost certain to develop.

But you need never have typhoid fever. It is one of the few preventable diseases.

By means of three simple, painless inoculations—entirely safe and leaving no scar—your doctor can make you immune from typhoid fever for two or more years. The United States Government tests and approves all typhoid vaccine before it reaches physicians.

Before you start on your summer outings in the country, consult your physician as to the advisability of being inoculated. Make sure that typhoid will not claim any member of your family. Metropolitan will mail free its booklet, "The Conquest of Typhoid Fever." Ask for Booklet 630-N.

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VOL. LVII, No. 6 WASHINGTON JUNE, 1930

THE NATIONAL GEOGRAPHIC MAGAZINE

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THE FIRST AIRSHIP FLIGHT AROUND THE WORLD

Dr. Hugo Eckener Tells of an Epochal Geographic Achievement upon the Occasion of the Bestowal of the National Geographic Society's Special Gold Medal

BEFORE an audience of more than 6,000 members of the National Geographic Society, including Cabinet officers, members of Congress, diplomats from 35 foreign nations, high-ranking officers of the Army and Navy, noted scientists, and distinguished citizens, Dr. Hugo Eckener, first in history to navigate an airship around the world, was awarded the Special Gold Medal of The Society at Washington, D. C., on the evening of March 27, 1930.

Upon the stage of the Washington Auditorium with the famous German airship builder and navigator was His Excellency Friedrich W. von Prittwitz und Gaffron, German Ambassador to the United States; Dr. Gilbert Grosvenor, President of the National Geographic Society, and Dr. John Oliver La Gorce, its Vice-President. In the audience were Frau Doktor Eckener and Knut Eckener, son of the guest of honor.

Dramatic music, in harmony with the spirit of the evening, was given by the United States Marine Band Orchestra, and during the program a remarkable motion picture was shown of the progress of the *Graf Zeppelin* on its epochal round-the-world cruise.

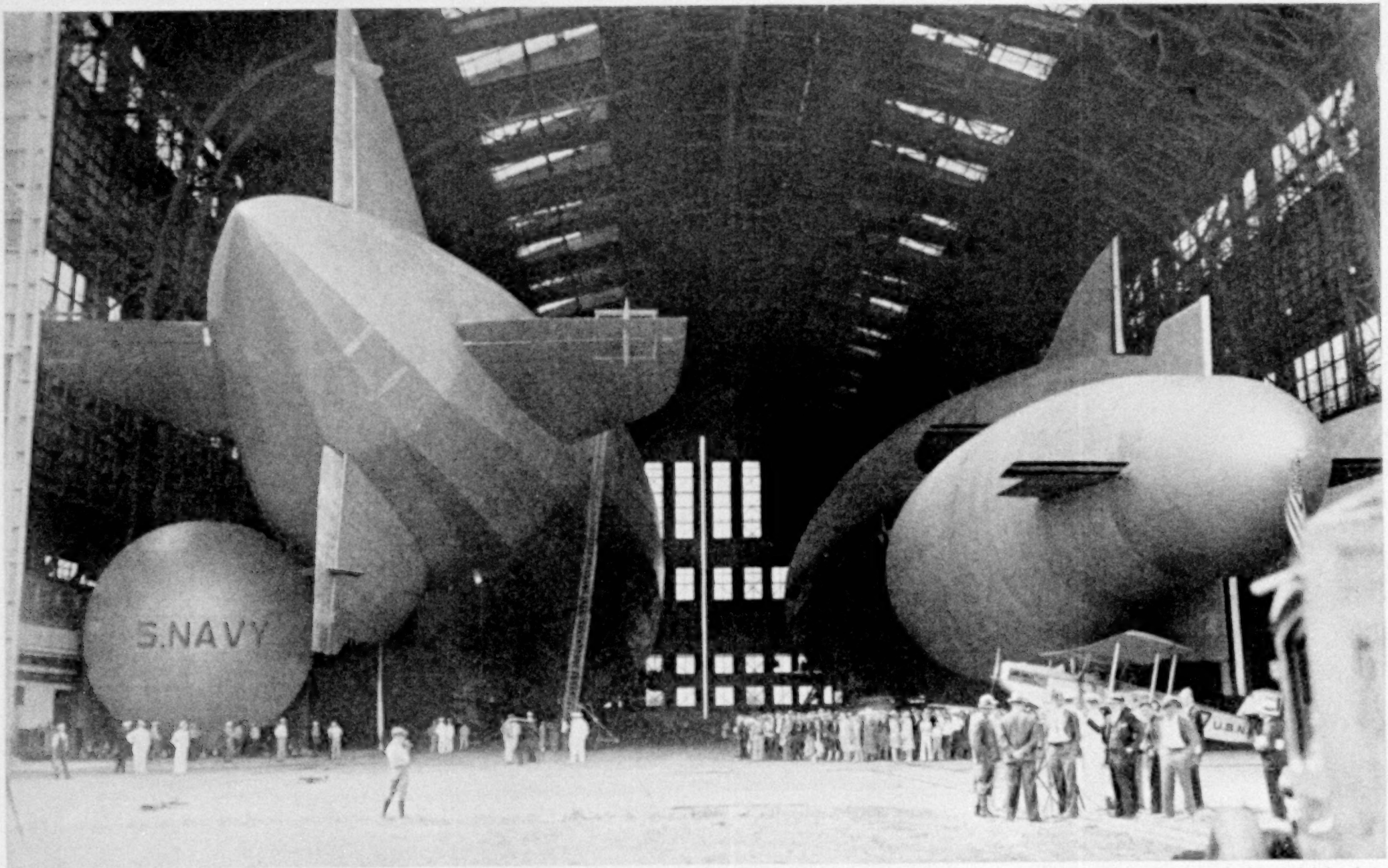
The presentation of the medal was made by Dr. Grosvenor, who said:

"Members of the National Geographic Society from every State in the Union and distinguished guests from many nations are assembled to-night to honor Dr. Hugo Eckener, of Friedrichshafen, Germany, first man to fly a dirigible around our globe.

"This noteworthy gathering is representative of the 1,285,944 members of the National Geographic Society, residing in 122 mainland countries and on hundreds of islands, from Iceland to Madagascar, Samoa, and Fiji.

"Dr. Eckener flew across three continents. Geographic members from seven continents acclaim his achievement—seven continents, that is, by including Antarctica, where until recently we had a very famous member visiting.

"It is in the name of this world membership that your Board of Trustees have authorized me to bestow upon Dr. Eckener the National Geographic Society's Special Gold Medal to commemorate the great contributions to geographic knowledge made by his air cruise around the world. One side of this medal bears the seal of the National Geographic Society, which



Photograph by Pacific and Atlantic

THRONGS WITNESSED THE PREPARATIONS FOR DR. ECKENER'S EPOCHAL FLIGHT

While final arrangements for the great cruise were pushed forward, swirls of visitors eddied ceaselessly through the huge hangar at Lakehurst, New Jersey. The *Graf* (at the left) shared quarters with the dirigible *Los Angeles*, a United States Navy free balloon, a blimp, and a plane.

seal has appeared on the only ten other medals The Society has awarded in its 42 years of existence.

"Thus we inscribe Dr. Eckener's name on a memorable roll of modern immortals in geography and exploration, a roll illuminated by the names of Peary, Amundsen, Shackleton, Bartlett, Goethals, Stefansson, Gilbert, Bennett, Lindbergh, and Byrd. It is interesting to recall that four of the eleven medalists of The Society are associated with aëronautics.

THE GEOGRAPHIC'S FLAG HAS FLOWN AT BOTH POLES

"The historic flag of the National Geographic Society which is unfurled on the stage to-night has three colors: brown, symbolizing land exploration; green, for the sea; and, prophetically, blue, for the skies.

"This Geographic flag that Peary carried to the North Pole and Byrd to the South Pole; that Hiram Bingham raised over the most important South American archeological discovery in 300 years, at Machu Picchu, the Inca city; that Griggs unfurled when he led a Society expedition into the Valley of Ten Thousand Smokes, in Alaska; that upheld Neil Judd and Douglass for ten years, until they solved the secret of our own Southwest, which had puzzled American geographers for three centuries; that recently has flown over The Society's solar station at Mount Brukkaros, in Africa, and is borne by explorers into South American jungles and on bleak Tibetan mountain sides, will be more and more in the skies.

"The members of this Society appreciate that aviation has been of very special service to geography. Aircraft are the instruments of exploration, of aërial mapping, of aërial photography. Photography from the air has added new, dramatic opportunities for portraying Nature's scenes, landscapes, and human structures in the language which so often is the native tongue of geography—the photograph.

"We honor Dr. Eckener to-night for the years of experiment, inventive genius, and patient research which culminated in his astounding achievement. The whole world literally held its breath till his flight was finished. Along the path of his great ship millions waited, hoping to glimpse it as it flew over. His remarkable voyage illustrates his unusual organizing and executive ability as well as his mastery of the science of aëronautics, acquired by hard laboratory study and by more than 3,000 air journeys.

"Through Dr. Eckener we also honor his gallant officers and crew, and, above all, his talented and charming wife and helpmate, Frau Eckener, who graces this meeting with her presence.

"Already America has a flying monument to Dr. Eckener in the *Los Angeles*, which, in 1924, he piloted from Friedrichshafen to Lakehurst.

"In 1928 Americans were thrilled by Dr. Eckener's feat of flying the *Graf Zeppelin* to the United States and back to Germany, carrying 20 passengers in addition to its crew of 40 men.

"In the audience to-night is his son, who played a heroic part in that adventurous journey by repairing in mid-ocean a stabilizing fin which had been torn by a violent storm.

DR. ECKENER'S TEACHER WAS A BALLOONIST IN GENERAL GRANT'S VIRGINIA CAMPAIGNS

"Only one other man has contributed as much as our gold medalist to the development of the dirigible. That was his teacher, Count Zeppelin, who, we like to recall, was a balloonist with General Grant's army in the Virginia campaigns.

"Dr. Eckener's flight around the world in a dirigible was even more than a marvelous feat in aërial engineering and navigation. It symbolizes the advance of science, which tends to bind peoples more closely in friendship and in understanding.

"Therefore, Dr. Eckener, as evidence of our admiration and respect, it is my honor and pleasure to present to you the National Geographic Society's Special Gold Medal, the inscription on which reads: 'This Special Medal of the National Geographic Society is awarded to Hugo Eckener for his work in furthering the progress of airships and to commemorate the first Around-the-World flight of the *Graf Zeppelin* in 1929, under his command.'"

DR. ECKENER'S ACCEPTANCE

In accepting the medal, Dr. Eckener said:

"When, some months ago, I received the message that the National Geographic Society, on account of the world-flight of the

© Pacific and Atlantic

THE MONARCH OF THE SKIES HOVERS OVER LAKEHURST

The New Jersey field is the home port of the United States Navy's giant dirigible *Los Angeles,* whose hangar the *Graf* shared (p. 654).

Graf Zeppelin, intended to confer on me the high and exceptional honor of their Gold Medal, I felt in my inmost soul, I must admit, some embarrassment; instinctively, with a critical eye, I valued and compared the geographical significance and the enrichment of knowledge caused by our flight with the highly scientific geographical accomplishments of discoveries by Peary, Byrd, and others who, as pioneers of geographical investigation, had fulfilled deeds of historical importance.

"The performance of the *Graf Zeppelin,* in comparison, seemed to me rather unimportant because, though we could bring home from our flight some new pictures of the little-explored regions of Siberia, this was hardly what could be considered an important contribution to the science of geography.

"But, of course, the National Geographic Society has taken into consideration all this in a more authoritative manner, and if, in spite of all, they have come to the decision which is an extreme honor to me, I feel that thereby they intended to emphasize new points of view to be considered in future geographical investigations. I think that they mainly wanted to encourage and stimulate the modern form of such investigation, relying on aircraft, which, indeed, opens up a vast prospect. Perhaps they intended to express in a very impressive manner, if I am allowed to say so, that geographical investigation has taken hold of the third dimension, that the aërial ocean means a field of increasing importance for geographical science and has to be included in the range of geographical spheres of investigation.

MANY REGIONS AWAIT EXPLORATION BY AIR

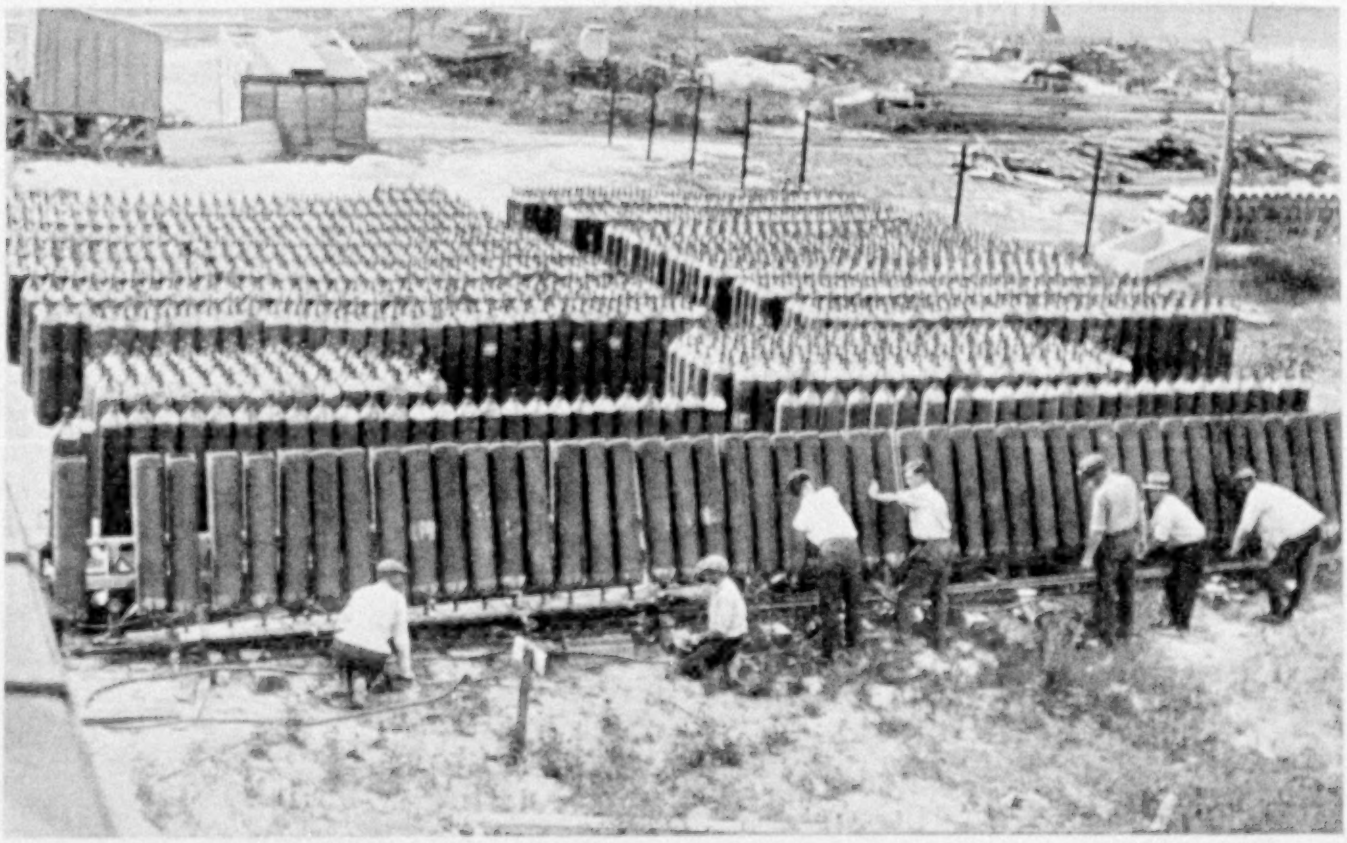
"Indeed, this is true in more than one respect! Above all, there is no doubt that there are certain regions on the globe which men can only reach with difficulty, or not at all, when using the hitherto-prevailing means of transportation. I am thinking of the Arctic and Antarctic regions; of some deserts, as in Arabia, the Sahara, in Australia, perhaps also in central Asia; of the swampy districts in north Siberia, and so on.

"Here exploration by means of aircraft would find a vast and fruitful field

Photograph by Pacific and Atlantic

CROWDS SURROUND THE GLOBE-CIRCLER AT LAKEHURST

Among the thousands of men, women, and children who saw the *Graf* start out upon the world-compassing voyage were many who, a little more than 21 days later, welcomed the ship back, triumphant over space and weather.

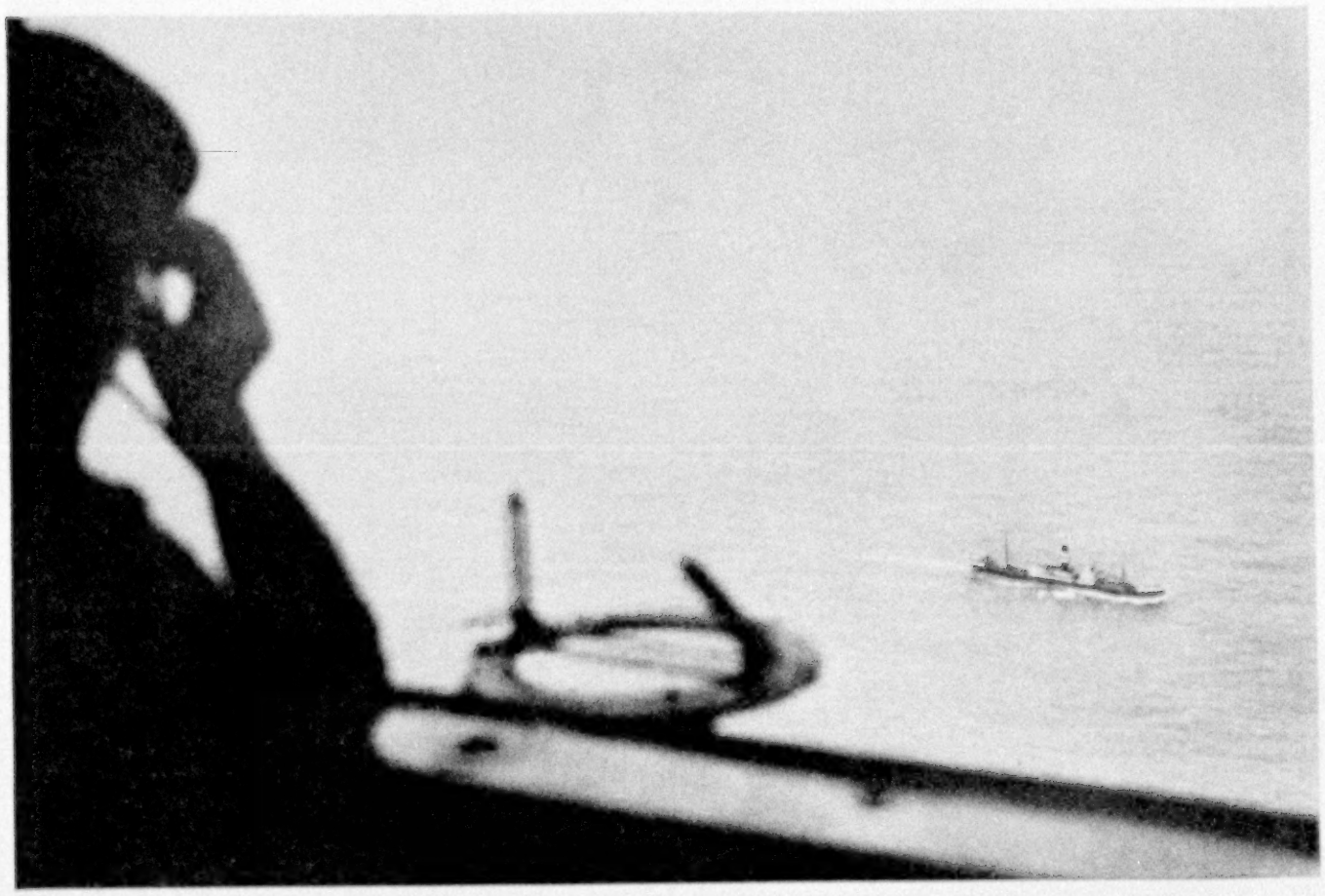


Photograph by Pacific and Atlantic

MECHANICS HOOK UP TANKS TO FILL THE DIRIGIBLE

Lifting cells of the *Graf* hold hydrogen, while the fuel cells take ethane. One hundred and sixty-two cubic feet of hydrogen are contained in each tank shown above. In preparation for the journey from Lakehurst to Friedrichshafen, 3,500 gallons of gasoline (as auxiliary fuel) and 1,100 gallons of oil were pumped aboard.

PASSENGERS ON THE "GRAF ZEPPELIN" VIEWING GERMANY



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AN OCEAN LINER SIGHTED FROM THE "GRAF" IN MID-ATLANTIC

Voyagers by air and by sea exchanged curious glances as their respective conveyances came momentarily abreast. From every vessel along the route word went out that the *Graf Zeppelin* had been seen. For the aircraft the crossing time was 55 hours and 22 minutes, a record trans-atlantic passage for a ship of this type.

for activity and could procure results likely to increase our knowledge invaluably. This exploration ought to be started systematically.

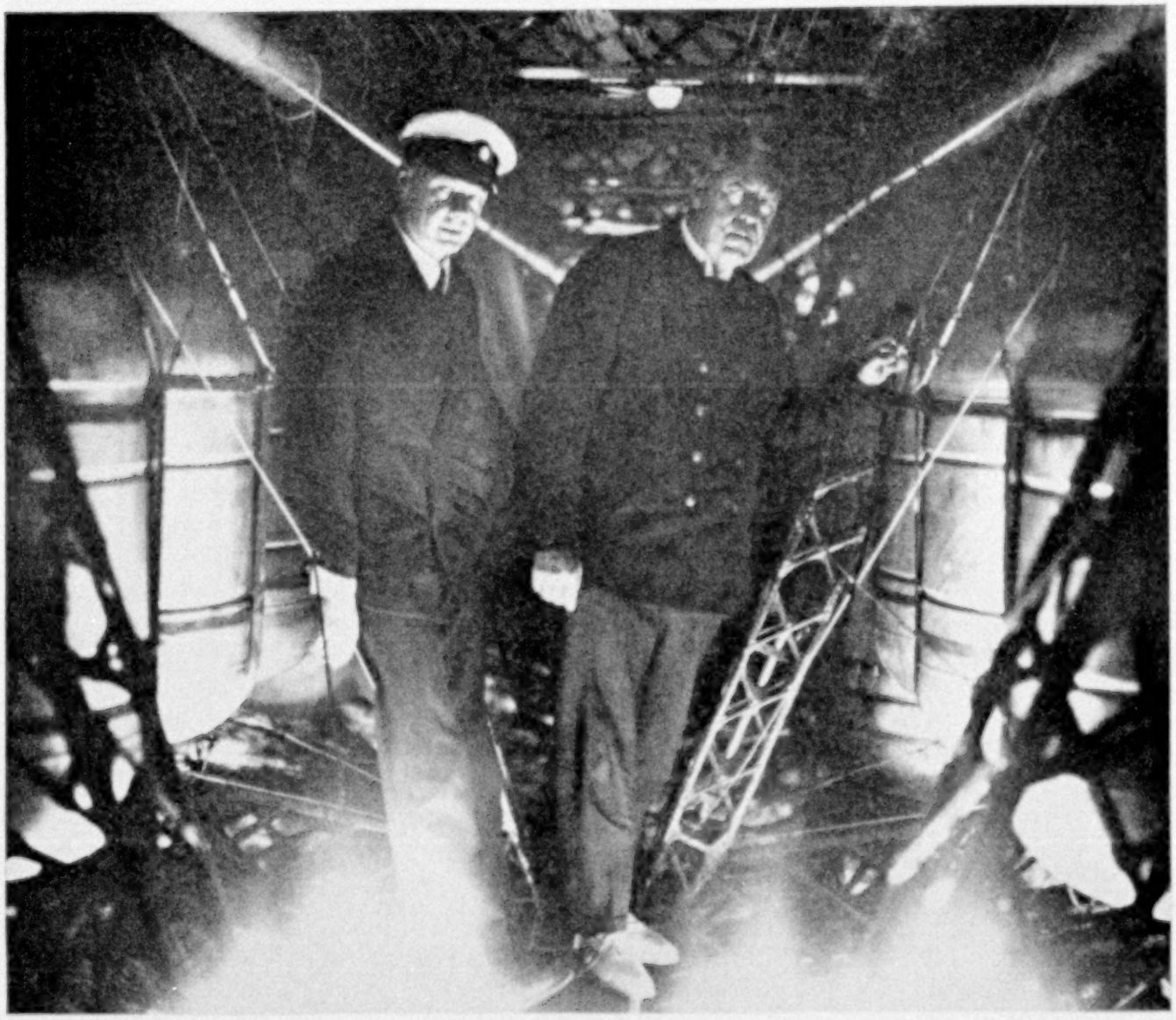
"Furthermore, exploration of the atmosphere itself and of what goes on within it will be a task which will very strongly interest geographical science. All this is a question of meteorological science, primarily. But, in the final analysis, science is carried on mostly with a view to practical advantages for mankind, and thus meteorological knowledge to a large extent coincides with a range of problems and discernment of geographical science in so far as this latter informs us of the formation of the earth and the possibility of living thereon.

"You need only open an ordinary atlas and you will find that climatology of the different land districts and of the different oceans forms a considerable part of our geographical knowledge. Furthermore, you will see how the knowledge of oceanic currents and of prevailing winds is utilized to the advantage of ocean transportation. Now, in the beginning of air transportation, we realize the practical importance which further study of the typical and special features of the atmosphere in different regions of the globe is sure to have.

"An air pilot judges atmospheric occurrences differently from a sailor, clinging to the surface of the ocean. I can imagine that some day there will be atlases designed specially for the needs of air pilots. In this respect we are still in the pioneer stage.

"During our flights with the *Graf Zeppelin* thus far, including the flights over the Atlantic and the Round-the-World Flight, we strongly felt the desire to study and test the atmospheric conditions over the various oceans and continents from the point of view whether or not a regular air service might be possible.

"I am extremely thankful to the National Geographic Society for the extraordinary recognition by which they have honored our endeavors; but I feel I should



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COMMANDER ECKENER AND HIS SON INSPECT THE FUEL TANKS

The younger man, Knut Eckener, first won the plaudits of the world in 1928, when he led other members of the crew in repairing the port horizontal fin of the *Graf Zeppelin* in mid-Atlantic on its first flight from Friedrichshafen to Lakehurst.

share this great honor, not only with my officers and crew, but also with all those who gave us their valuable support. The most important assistance was that received from the United States Navy Department. Without their support I feel sure we could *not* have been successful.

THE PURPOSE OF THE WORLD TRIP

"If someone were to ask me what the purpose of the *Graf Zeppelin's* world cruise was, I should answer, frankly, that no definite plan existed when first the thought of the trip occurred. President Hoover once mentioned, in a telegram of congratulation to us, that the period of great adventure was apparently not over.

"Something similar to what inspired Magellan, or Captain Ross, or, later on, Peary or Nansen, must also have been in our blood when the idea of flying around the world in our airship occurred to us.

"We knew we had a good and capable airship. We had proved it on various trips, fighting against the elements, and the desire to explore spurred us on. So we conceived the seemingly fantastic idea of a world cruise, to see other seas and other continents, and to widen our knowledge.

"There was the desire, above all, to learn what the capabilities of an airship are; how to make utmost use of them, so that regular air traffic may be possible in various zones and climates. A trip around the world, leading over several oceans and continents of entirely different meteorological conditions, seemed likely to increase our knowledge of the airship's reaction

© International by Robert Hartman

THE "GRAF" CROSSED KÖNIGSBERG AT A MILE A MINUTE

Cheered on by radio greetings and best wishes from the chief burgomaster of this East Prussian port, the world-cruising Zeppelin sped into the east less than twelve hours after leaving Friedrichshafen, 720 miles away.

under various circumstances; and so, at the very beginning, it was actually a flight into uncertainty, to gain wider experience in air navigation.

DISPROVING THE BELIEF THAT AN AIRSHIP IS ONLY FOR FINE WEATHER

"Our plan developed the thought that this great trial of the airship, by which the public would judge it, should give a definite proof of the craft's usefulness under any weather conditions, especially for transoceanic trips.

"The airship has until now decidedly passed for a 'fine-weather ship.' Public opinion has awaited a solution of the aëronautical problem only in connection with the airplane. The objection had always been raised that the airship was too large and clumsy and much too slow.

"Now, in this proposed round-the-world flight we saw a chance to answer the question whether the airship was really only a 'fine-weather airship' or whether it could fly also under most difficult air conditions. To give our ship an impartial trial, we planned to make the trip on a definite schedule.

"From the beginning, it seemed to me that the route from Friedrichshafen to Tokyo would be the most interesting, if not the most daring.

"Flying conditions over Asia seemed very indefinite and difficult, not only from the geographic, but also from the meteorological standpoint. Charts of Siberia are incomplete, particularly as regards mountains and their heights. A pilot, however, absolutely must be accurately informed

Photograph courtesy Dr. Hugo Eckener

A FORCED LANDING HERE MIGHT WELL HAVE PROVED FATAL

This dismal stretch of swampy pools, fringed with brush, was photographed as the airship flew over the great basin of the River Ob, in western Siberia. These swamps are impassable in summer (see pages 665 and 669).

Photograph courtesy Dr. Hugo Eckener

A COLD, WATER-LOGGED, BRUSH AND TREE-GROWN SWAMP IN THE "TAIGA" REGION, BETWEEN THE OB AND THE YENISEI

For many hours the route lay over these desolate wastes, where there were not even waterfowl (see, also, pages 665 and 669).

© International by Robert Hartman

OVER THE YENISEI ON ITS NORTHWARD COURSE

Commander Eckener first planned to cross this Siberian river at its mouth, but storm clouds over the Ural Mountains caused him to turn south to avoid the highest peaks.

Photograph courtesy Dr. Hugo Eckener

BENEATH THE FLEETING AIRSHIP SLID ENDLESS MILES OF PRIMEVAL FOREST

This stream was seen winding through the woods when the ship's position was latitude 63° north, longitude 84° east.

concerning the heights of mountains, especially when they must be crossed in cloudy or foggy weather.

"A safe altitude must be maintained to avoid collision with mountain sides in fog or clouds. It would, however, be impossible for the airship to travel at such an absolutely safe altitude under certain circumstances, particularly in the beginning of a flight, when the ship is still heavily laden with fuel.

"These considerations led us to relinquish our first idea of a flight over southern Siberia, as the stretch between Irkutsk and Vladivostok leads over very high mountains, which in summer are often covered with clouds. I therefore decided to make the flight in a more northerly direction, over the so-called greater spherical circle.

"By this route we could fly around the mountains of southeastern Siberia in a wide circle, and would only have to pass over the Stanovoi Mountains between the Lena River and the Sea of Okhotsk, the airship having in the meantime become much less heavily burdened.

"A more careful study of Siberia's meteorological conditions showed, furthermore, that southeastern Siberia and Manchuria are subject to heavy rain and thunderstorms during July and August, when we planned to be in the Orient. Such storms would make the accomplishment of a flight over these districts almost impossible.

Photograph courtesy Dr. Hugo Eckener

"THE BROAD YENISEI RIVER SEEMED TO US LIKE A SAFE STREET THAT WOULD LEAD US AGAIN TO TOWNS AND PEOPLES"
(SEE, ALSO, PAGE 669)

Photograph courtesy Dr. Hugo Eckener

THE SHADOW OF THE "GRAF ZEPPELIN" GLIDES SILENTLY OVER INFINITE GREEN FORESTS IN THE YENISEI BASIN (SEE PAGE 669)

Photograph courtesy Dr. Hugo Eckener

AN ISOLATED SETTLEMENT OF RUSSIAN COLONISTS ON THE WEST BANK OF THE YENISEI RIVER, OPPOSITE VERKHNÉ IMBATSK

Russian migration to Siberia has formed "islands" of pioneer white population, mostly at points on the rivers. Here life is hard, roads are primitive, and bridges few. Dog, reindeer, and horse-sleds are used in winter, with much boat traffic on certain rivers in summer.

"I decided, therefore, on a route as far north as possible, over the mouths of the Ob and Yenisei rivers, the middle course of the Lena, and the Stanovoi Mountains, southeast of Yakutsk. From the geographical point of view, this route was of interest, as it would lead over the remote and almost unknown territories of far-northern Siberia, and would give us a chance to bring home an abundant number of photographs.

"Unfortunately, weather conditions prevented us from following the route as planned. When the airship was flying over central Russia we received weather reports announcing a strongly marked depression in the extreme north and in the adjacent provinces of Siberia. Under such conditions the northern Urals, some of which are nearly 7,000 feet high, were covered with clouds. So we would have been forced, during the first part of our flight, to ascend to a safe height of more than 7,000 feet. This the heavily burdened ship would not have been able to accomplish. I was, therefore, obliged to make a detour toward the south, and to pass over the Urals about 65 miles from Sverdlovsk (Ekaterinburg) at a low altitude and when the weather was clear.

"The flight beyond the Urals led over such wonderfully interesting regions that the deviation from our original plan was perhaps not to be regretted from the point of view of geographical interest.

"On the Siberian side of the mountains we saw dozens of tremendous forest fires, the dense smoke of which covered a vast area of many hundred square miles and hid the earth from the airship.

"We were obliged to pass through layers of smoke, which drifted from south to north at a distance of from 40 to 50 miles, until it was clear enough for us to be able to see fairly distinctly below, but for many miles the view was very indistinct and the smell of the fires continued for hours.

"After passing this zone we turned toward the northeast, over a bend of the River Ob, where, after describing an easterly course, it flows in a northerly direction. We soon arrived at the *taiga* territory, a region of widespread swamps which lie on both sides of the Ob (p. 663).

"We flew hundreds of miles over uninterrupted stretches of these swamps. We then saw small pools, one after another, followed by more or less large lakes. These were connected by strips of swampy land. Then came low, swampy woods extending for many miles. The whole region gave the impression of a dreadful waste, uninhabitable for man or beast, where there were not even waterfowl.

SAILING OVER SILENT WASTES WITH HAPPY PASSENGERS

"In grotesque contrast to all that deadly silence, the airship sailed, its cabins lighted, its care-free occupants dining and enjoying themselves; and yet, if for some reason it had been necessary to land in these swamps, escape from those black-green waters would not have been possible.

"We flew over that dread waste the whole night, from 7 in the evening until 9 o'clock next morning, and it was with sensations of relief that we finally hailed the broad Yenisei River, which, notwithstanding its loneliness and remoteness, seemed to us like a safe street that would lead us again to towns and people.

"Since we could not tell from the maps at just what point we first saw the river, we flew downstream for a while in an attempt to reach the Imbatsk wireless station and to follow the right course from there.

"The banks of the river extended endlessly, a monotonous waste, not a house, not a settlement, in sight, not a boat on the broad, powerful stream to enliven the picture. After about an hour, a small village of a few huts appeared on the left, and at the right was Imbatsk, for which we had been looking.

"Our appearance might have impressed as an inconceivable miracle the inhabitants, who begin and end their lives here, far from the outer world. Perhaps we frightened them, for we could not see anyone emerge from the houses. Three or four animals drawing carts ran away.

"Flying toward the lower course of the Tunguska River, where it turns directly northwest, we passed hilly and woody districts. It was entirely deserted, isolated country, woody and intersected by deep glens here and there. Far to the south and northwest we saw ridges of higher mountains. Never before, perhaps, had anyone viewed these territories, at least

Photograph courtesy Dr. Hugo Eckener

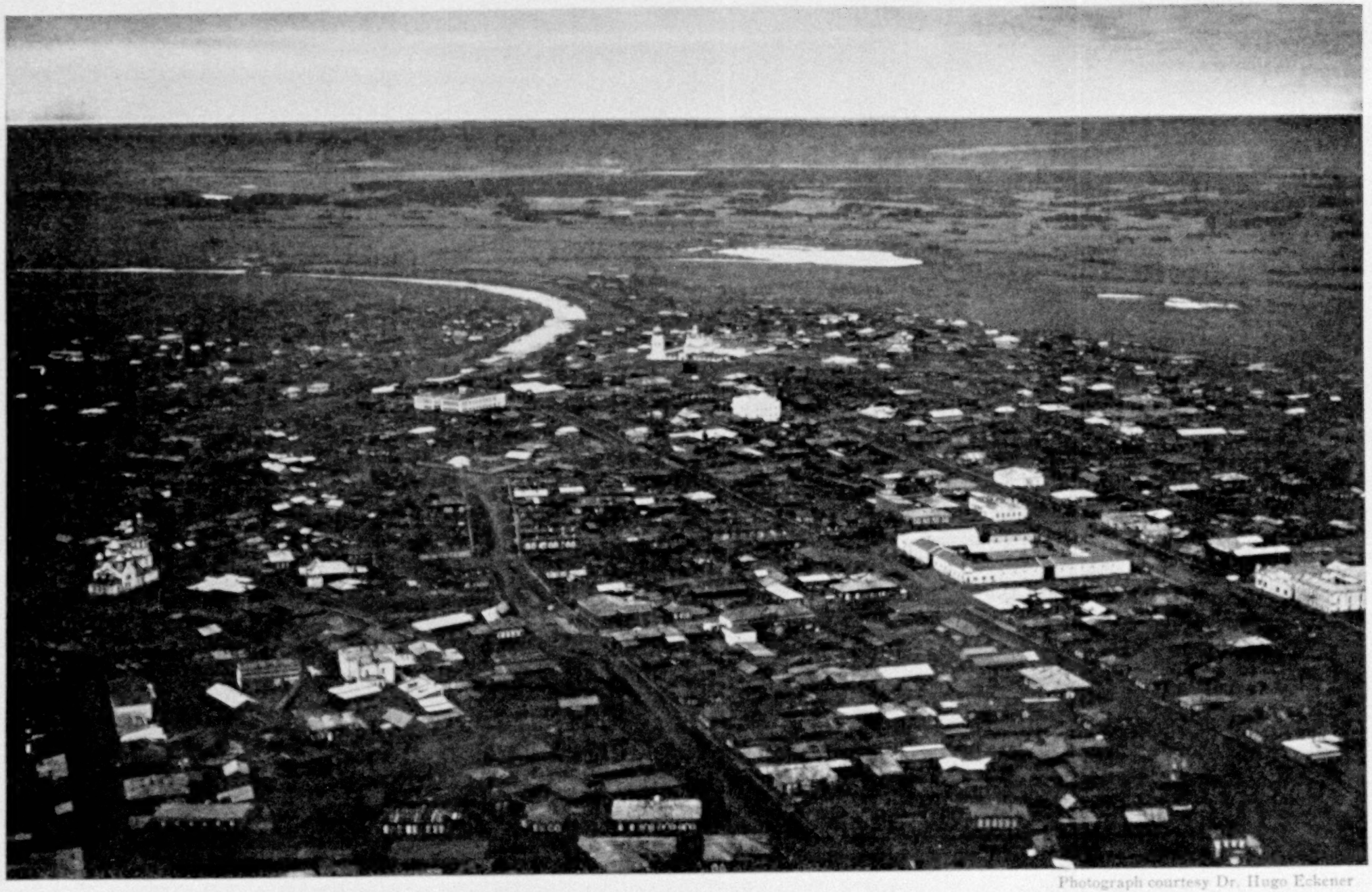
A CYCLONIC DISTURBANCE KEPT THE "GRAF'S" HANDLERS BUSY AS THEY FLEW UP THE LONELY VALLEY OF THE TUNGUSKA RIVER

This disturbance occurred in latitude 64° north, longitude 103° east (see, also, text, page 669).

Photograph courtesy Dr. Hugo Eckener

TOSSED AND SHAKEN IN VIOLENT GUSTS, THE ROLLING AIRSHIP BATTLED A BAD STORM ABOVE THE WINDING TUNGUSKA

Overhead a coal-black cloud races with the gale. Beneath, in the bright streak, sunshine falls on the long, lonely reaches of the Tunguska, whose banks are almost uninhabited (see page 669).



Photograph courtesy Dr. Hugo Eckener

THE AIR TRAVELERS OVERLOOK YAKUTSK, WHICH RUSSIAN FUR TRADERS AND COSSACK GARRISONS SETTLED THREE CENTURIES AGO

This far-away Slavic outpost is capital of a vast autonomous republic of the same name, whose scant population hardly exceeds eight per square mile. Russians live only about the mines, and in places have adopted the native Yakut language.

Photograph courtesy Dr. Hugo Eckener

THE GREAT RIVER LENA, RISING NEAR LAKE BAIKAL, WINDS NEARLY 3,000 MILES TO THE SEA

Half the year it is icebound, but Russian settlers scatter its valley as far north as Yakutsk. Near the delta of this stream the American explorer George W. De Long and certain members of the *Jeannette's* party perished of starvation in 1881.

Photograph courtesy Dr. Hugo Eckener

CROSSING THE WILD, BARREN STANOVOI RANGE

Barring the approach to the Sea of Okhotsk 500 miles east of Yakutsk, these unpeopled peaks and valleys of Siberia are practically unknown. Location, 57° north latitude and 138° east longitude.

not to such an extent. Now and then, perhaps bold trappers have crossed these regions during the brief summer, when the land is free from the snow of a long, hard winter.

"After about two hours we reached the Tunguska River, which we now followed for several hours, cutting off the curves of the stream by taking a straight course. The Tunguska is a full, broad stream navigable undoubtedly for a long way. During our flight we saw only one little boat with three people and on the banks just four or five huts or tents, wherein the Yakuts live their miserable existence.

"Late in the afternoon, on our monotonous route over these vast wooded districts, we encountered a heavy gust of wind, through which we tried to break at as great a height as possible. A wall of black menacing clouds was in front of us and darkened the country far off. Under these clouds the sunlit distance shimmered promisingly. The airship was somewhat shaken up in passing the critical point, but it soon flew steadily again and we could look calmly at the other side, which showed the scattered, whirling clouds (see pages 670 and 671).

"At sunset we had reached the upper course of the Tunguska and then ap-

Photograph courtesy Dr. Hugo Eckener

PEAKS AND CANYONS OF THE RUGGED STANOVOI OFFERED ROUGH PASSAGE

In strong winds that swept this range, the great bag rocked and swayed, and almost scraped the summits of the Stanovoi Mountains, which proved to be much higher than indicated on the maps.

proached the watershed between the Yenisei and the Lena. This watershed is an almost even highland, intersected by numerous small creeks, which gradually slope toward the east and the Lena—flat, monotonous, and vast.

"At 7 o'clock in the morning we reached Yakutsk, the broad stream of the Lena before our eyes (see pages 672 and 673).

"On the other side of the Lena the land rose gradually to higher and higher ranges of mountains, which we had to pass by ascending. This part of the trip was beautiful and impressive and recompensed us for hours which we had to spend over districts of waste and desolation.

"From the very beginning of our trip I had looked forward to the route which we were now approaching, as I could not find any definite information in the maps and geographic handbooks concerning the heights of the Stanovoi Mountains. One statement merely said that the part of the mountains we planned to pass was much lower than the northern part and had an average height of 3,500 feet.

LOFTY MOUNTAINS CLEARED BY ONLY 300 FEET

"According to the maps, the greatest heights of these mountains did not exceed 5,000 feet. Therefore it seemed that if the Stanovoi Mountains had been covered with clouds we could pass them safely

Photograph courtesy Dr. Hugo Eckener

CLIMBING OVER THE STANOVOI MOUNTAINS, THE ZEPPELIN SIGHTED SALT WATER AT LAST—THE SEA OF OKHOTSK (AT THE RIGHT)

The last lap, over a cold, forbidding, and desolate region of Siberia, was made at night. A red moon rose over the horizon and weirdly beautiful colors streaked the northern sky. Across the heavens shot a meteor and the ship talked by wireless with the American Legation in Peiping (Peking).

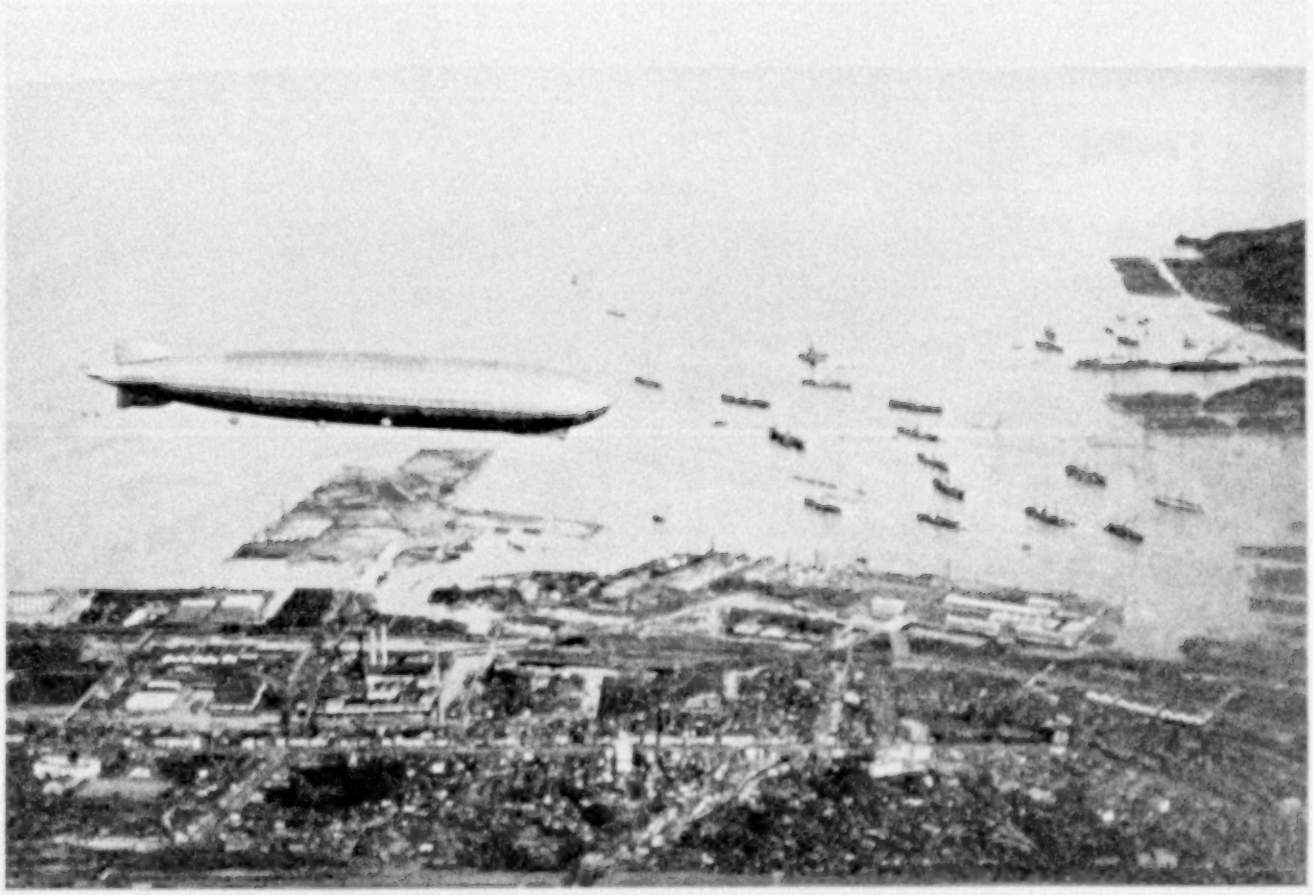
OVER YAKUTSK THE "GRAF'S" CREW DROPPED A WREATH FOR THE GERMAN DEAD

The Zeppelin sailed low in the early morning over the remote Siberian town of Yakutsk and deposited a memorial in the center of a cemetery near the cathedral above (see illustration, page 672).

© International by Robert Hartman

WARNING BEACONS OF THE SEA LEND THEIR AID TO A SHIP OF THE SKIES

While flying over the wild coasts of Siberia and Japan the globe-circlers were aided in checking their positions by lighthouses and other prominent features of the land and seascape.



Photograph from Acme

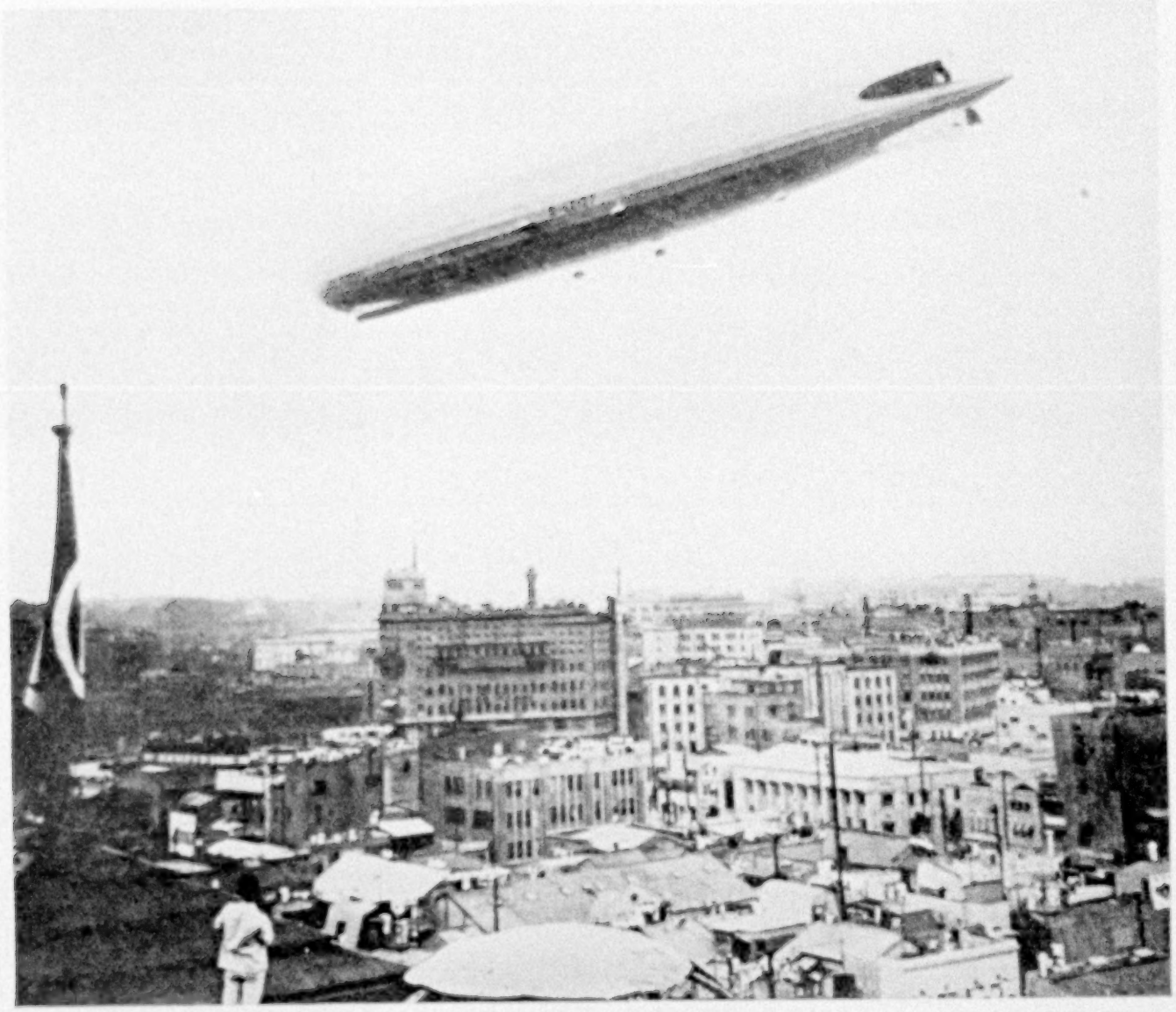
A PIONEER OF THE SKIES VISITS YOKOHAMA

In the nearly seven years that have passed since the great earthquake of 1923 wrought such havoc in Japan, this city has been practically recreated as a modern municipality. The newly erected buildings which the passengers aboard the *Graf* looked down on are constructed so as to be immune to any ordinary earth shock.

© International by Robert Hartman

JAPAN BELOW—CALIFORNIA OVER THE SEA!

Winds blowing crosswise of the Kasumigaura Air Field postponed departure of the *Graf Zeppelin* from Tokyo, but after a night of delay the huge bag rose safely and pointed eastward toward America's west coast.



Photograph from Wide World

ENTHUSIASTIC "BANZAIS" WELCOMED THE ZEPPELIN TO TOKYO

As the globe-encircling aircraft from Germany slowly crossed and recrossed the Japanese capital, shouts of greeting rose from the vast crowds. Entranced newsboys ceased selling their extras. Temple pigeons scattered in alarm at the motors' drum.

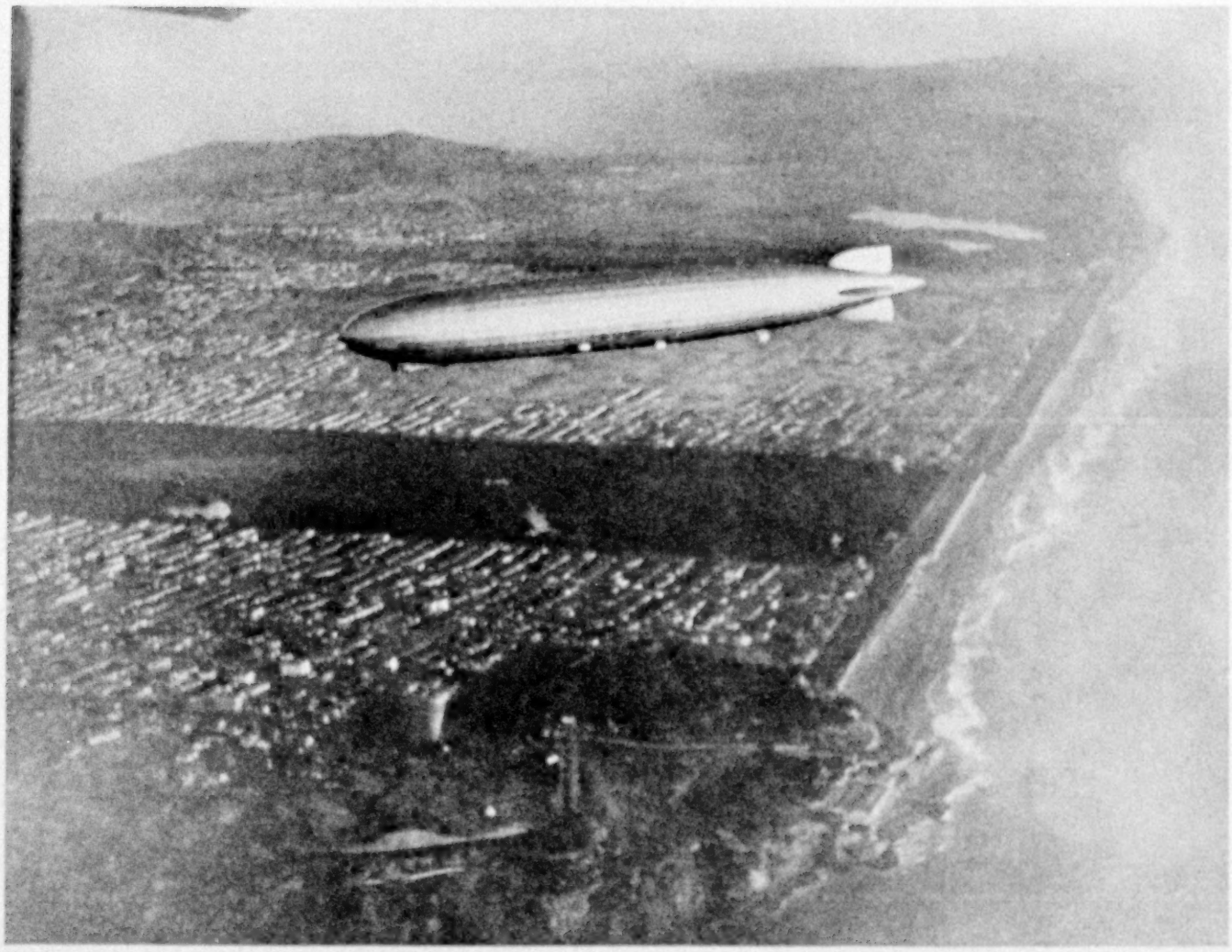
at a height of 5,300 or 5,600 feet, even if we had to grope our way through the fog. I had planned, if clouds were bad, to rise even to 6,000 feet. But we learned later that rocks, and not clouds alone, were to force us to fly very high. It happened this way:

"Halfway toward the Okhotsk Sea we had flown over ridges of 3,300 feet and more. By following deep canyons as long as possible, we were able to maintain an elevation of 2,300 to 2,600 feet until vast barriers of rocks blocked our way and forced us to ascend higher and higher.

"The mountains became more abrupt and awesome, partly covered with woods, partly barren and rising to magnificent peaks. We tried to find our way, if possible, over lower ridges, but soon had to ascend to 3,600 and 3,900 feet. More and more ridges of mountains towered before us and we had to go up to 4,500 and 4,900 feet.

"Finally, following a deep-cut valley, we arrived at the last ridge immediately before the Okhotsk Sea, which we had to pass at a height of 5,500 feet. We flew as close as possible, clearing the ridge by only about 300 feet. Steep walls of rocks at both sides were even 600 to 1,000 feet higher still. Therefore we should really have attained an elevation of 6,200 to 6,500 feet to have crossed the Stanovoi Mountains safely. We blessed our good fortune which gave us clear weather for this part of our trip.

"There was another reason to be thankful for the good weather: the Okhotsk Sea, which most of the time is covered with



Photograph from Wide World

FIRST AËRIAL CONQUEROR OF THE PACIFIC

Magellan of the air, Commander Eckener piloted his trustworthy Zeppelin over San Francisco's Golden Gate only a little more than 68 hours after bidding farewell to Tokyo. Steamers which left the Japanese capital days before were still plying the rolling waters of the Pacific on their slower way to the American port.

heavy fog, and therefore disliked by seamen, extended below us in a wonderful blue and its coast could almost be compared with the Riviera of the blue Mediterranean. Rocks sloped steeply toward the water and formed a coast line of marvelous charm. Some of the mountains right and left had their tops covered with fog, which drifted gracefully down the steep slopes.

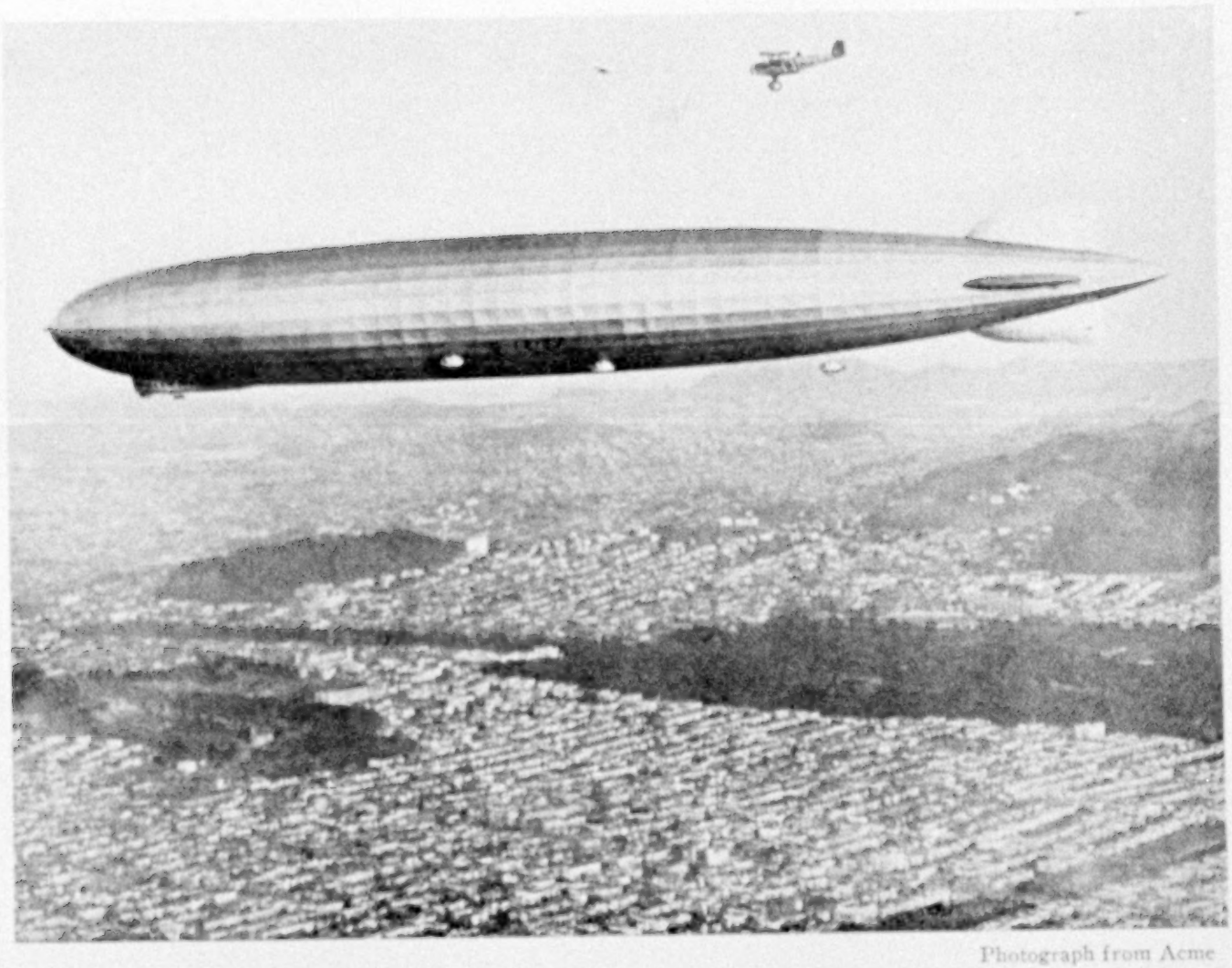
"After the long flight over remote, waste districts the passengers greeted this view with enthusiastic cheers: *'Thálassa! Thálassa!'*

"We flew by the small fishing harbor of Port Ayan, safely situated in a deep cove. Only a few huts and boats hinted that at this isolated spot people live and fight for life.

"Here our route across the immense continent really ended.

"With nightfall we piloted past Nikolaevsk, near the narrow sound which separates the island of Sakhalin from the Asiatic continent. The weather was excellent and augured a speedy flight. Toward midnight, however, the sky became overcast with thick clouds and the airship was caught by quick squalls. We had gotten into the tail of a light typhoon, which had passed Hokkaido Island the day before.

"This adverse weather, however, was not unwelcome to us, as it brought a fresh northeast breeze, which increased our speed. But we now had to be very careful in navigating, as we had to traverse the relatively narrow passage between the island and the continent in thick weather, between high mountains right and left, which rose to 6,500 feet. We navigated with utmost care in order to avoid collisions with the mountains on either side. Nevertheless we were glad



Photograph from Acme

STRONG NORTHWEST WINDS BORE THE "GRAF" OVER SAN FRANCISCO

As Commander Eckener brought his craft to the metropolis of northern California, he completed the first non-stop flight ever made over the Pacific. Newspaper and Army planes hovered like attendant pages around the city's guest, who did not tarry, but flew on to Los Angeles.

when growing daylight at 5 o'clock enabled us to see the water below, here and there, and to control our drift.

"At 6 o'clock we crossed the southwest point of Hokkaido, and then with bright sunlight continued our flight toward Tokyo, which we reached at 5 o'clock in the afternoon. We had traveled from Friedrichshafen, almost 7,500 miles away, in less than 100 hours.

"Of the individual phases of our crossing over Siberia we have brought home a number of good photographs which, perhaps, may be of certain value to geographers.

"Please allow me, Mr. President, to close my short report by asking you to accept a number of these photographs as an inadequate expression of my heartiest thanks for the high honor of bestowing on me the Gold Medal of the National Geographic Society."

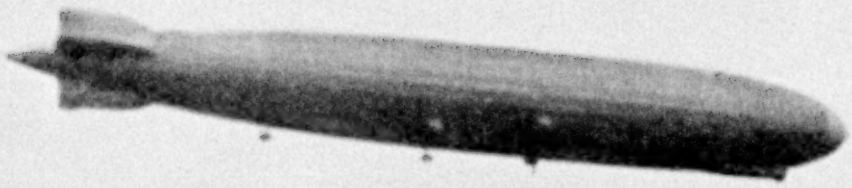
Dr. Grosvenor replied:

"Dr. Eckener, we are most grateful for your generous present of your priceless photographs and for the privilege of printing them in The Society's Magazine for the benefit of all our members.

"We wish you and Frau Eckener and your son many more years of happy work and equally brilliant accomplishment and hope you may eclipse the record of that grandparent of yours who, you tell me, enjoyed an active and useful life to the age of 104 years.

ADMIRAL BYRD'S MESSAGE OF CONGRATULATION

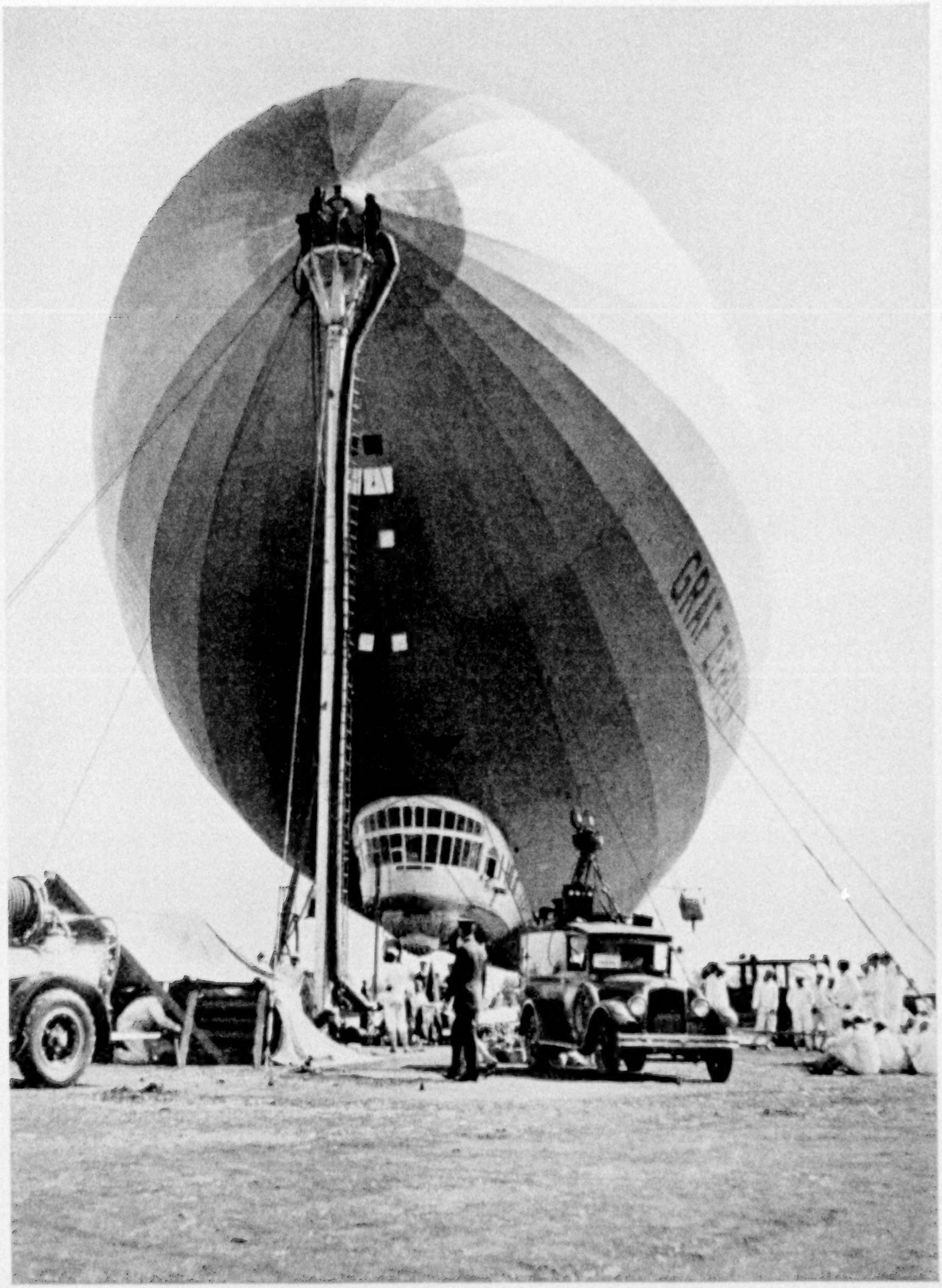
"And now, before the lights are turned off for the showing of the pictures, I will



Photograph by Pacific and Atlantic

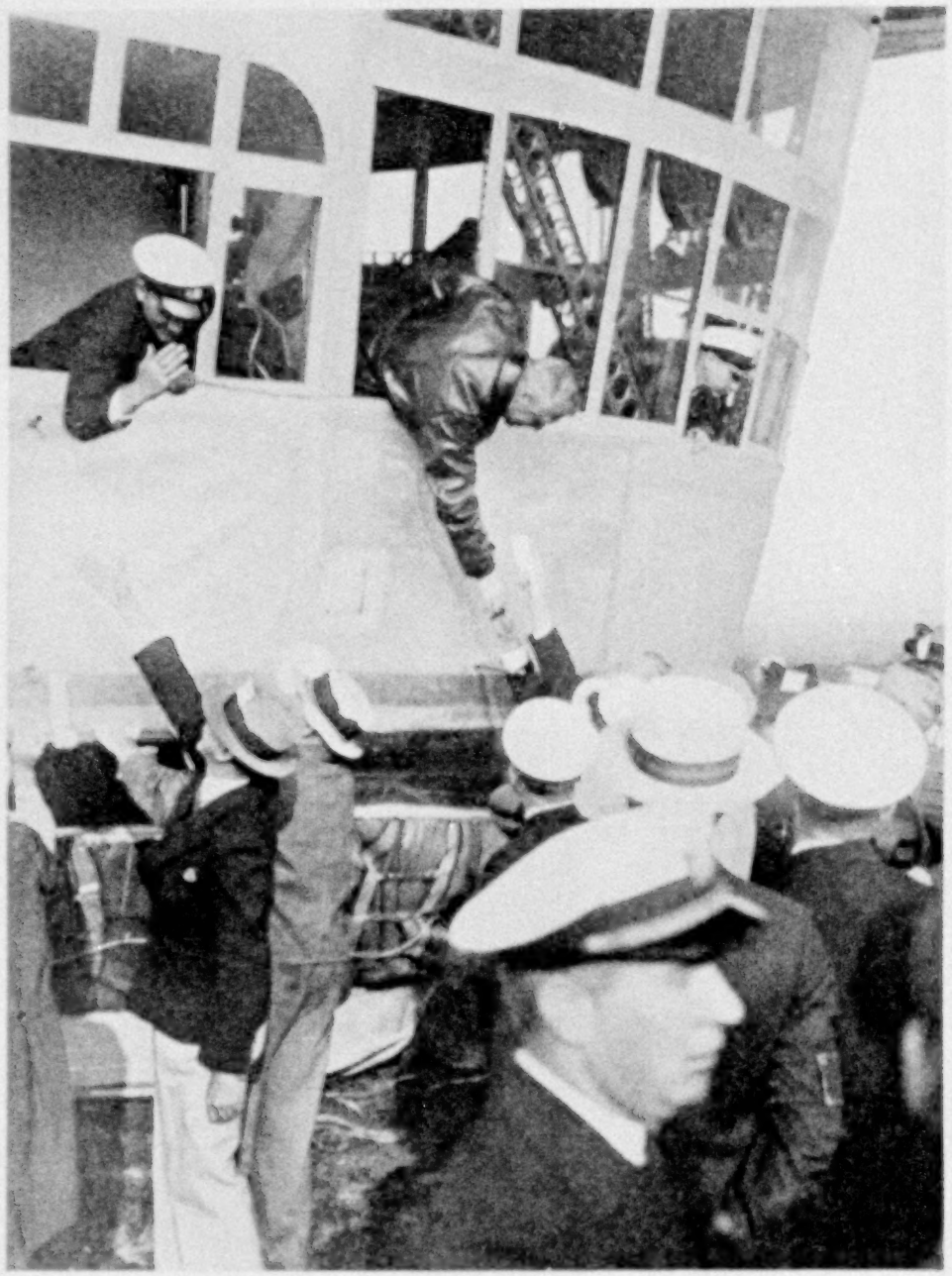
COMMANDER ECKENER MARVELED AT THE METROPOLIS OF THE MIDDLE WEST

Chicago's clear-cut, modern beauty, seen from a bright sky late in the afternoon of August 28, 1929, brought from the *Graf* Commander words of enthusiastic admiration. The bedlam of delirious sirens and whistles rose from a waving sea of handkerchiefs, hats, and torn paper to bid the flyers Godspeed.



AT LOS ANGELES THE "GRAF" PAUSED TO REFUEL

United States sailors grasped the cat lines as the great ship was made fast to the mooring mast at the Municipal Airport. Here it stayed from early in the morning of August 26, 1929, until dawn of the following day, while crews of workers gave everything a careful examination and replenished the fuel tanks for the last lap of the world journey, the flight across North America.



Photograph by Pacific and Atlantic

CONGRATULATIONS THAT ECHOED AROUND THE WORLD

Cries of "Well done!" greeted Commander Eckener, with his crew and passengers, at Lakehurst, New Jersey, upon the completion of the first around-the-world flight of a dirigible, as through a rim of haze the gray monarch of the air dipped to earth in the midst of welcoming thousands at 8:13 a. m. on Thursday, August 29, 1929.

Photograph from International by Robert Hartman

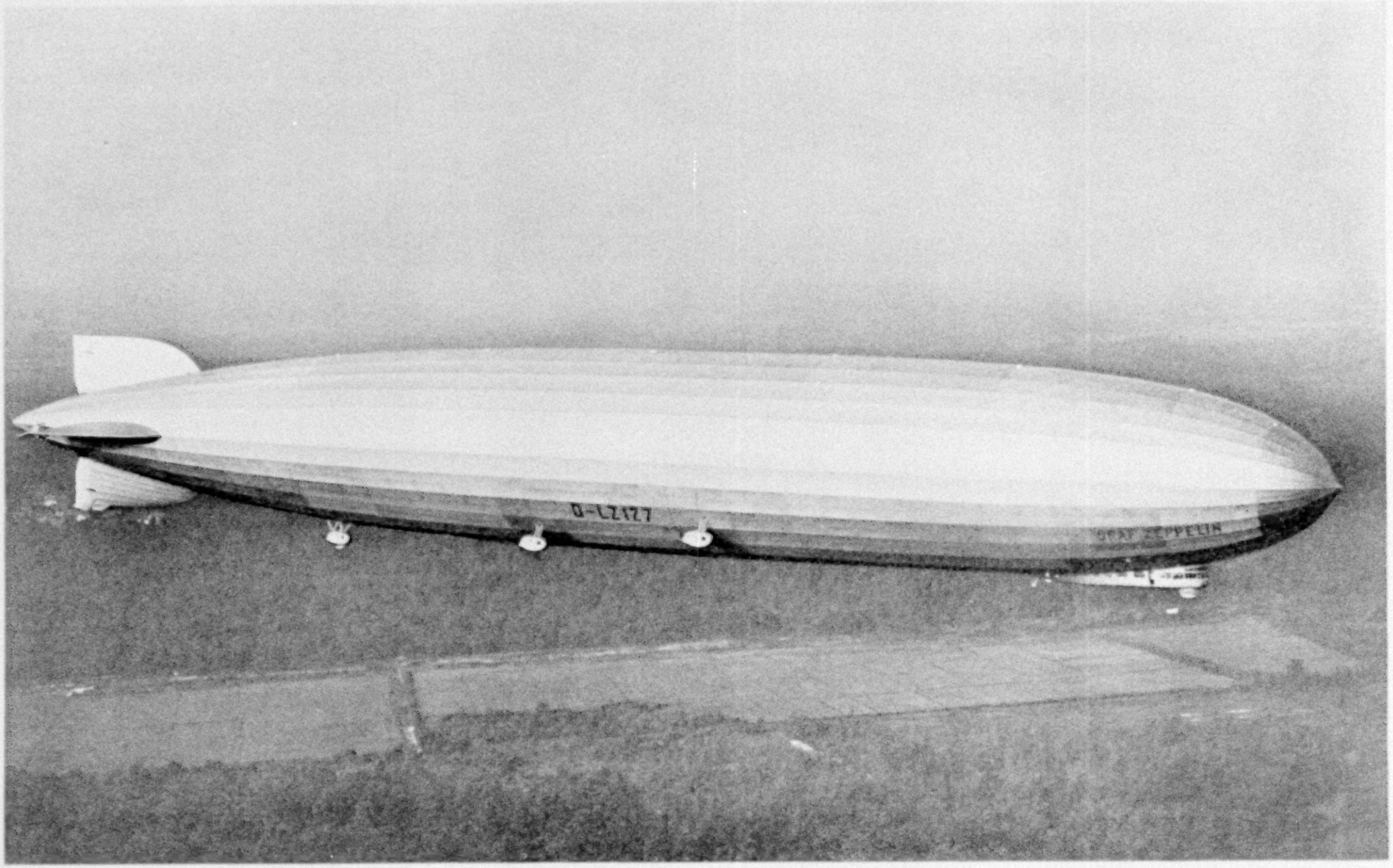
THE SHIP'S "EARS" ARE LOWERED OVER THE SIDE

Communication without wires, the greatest marvel of the day but a few decades ago, rendered a vital service during the flight of the *Graf Zeppelin*. First Radio Officer Dumke is shown ready to cast overboard the sensitive feeler on which messages were picked up during the voyage from Los Angeles to Lakehurst.

Photograph from Acme

NEW YORK GOT AN UNFORGETABLE THRILL OUT OF THE RETURNING SKY ROVER

The skyscrapers of the lower end of Manhattan Island seemed fairly to reach out as the giant ship passed over them. On her way to Lakehurst the soaring cruiser came to pay her respects to the City of Receptions.



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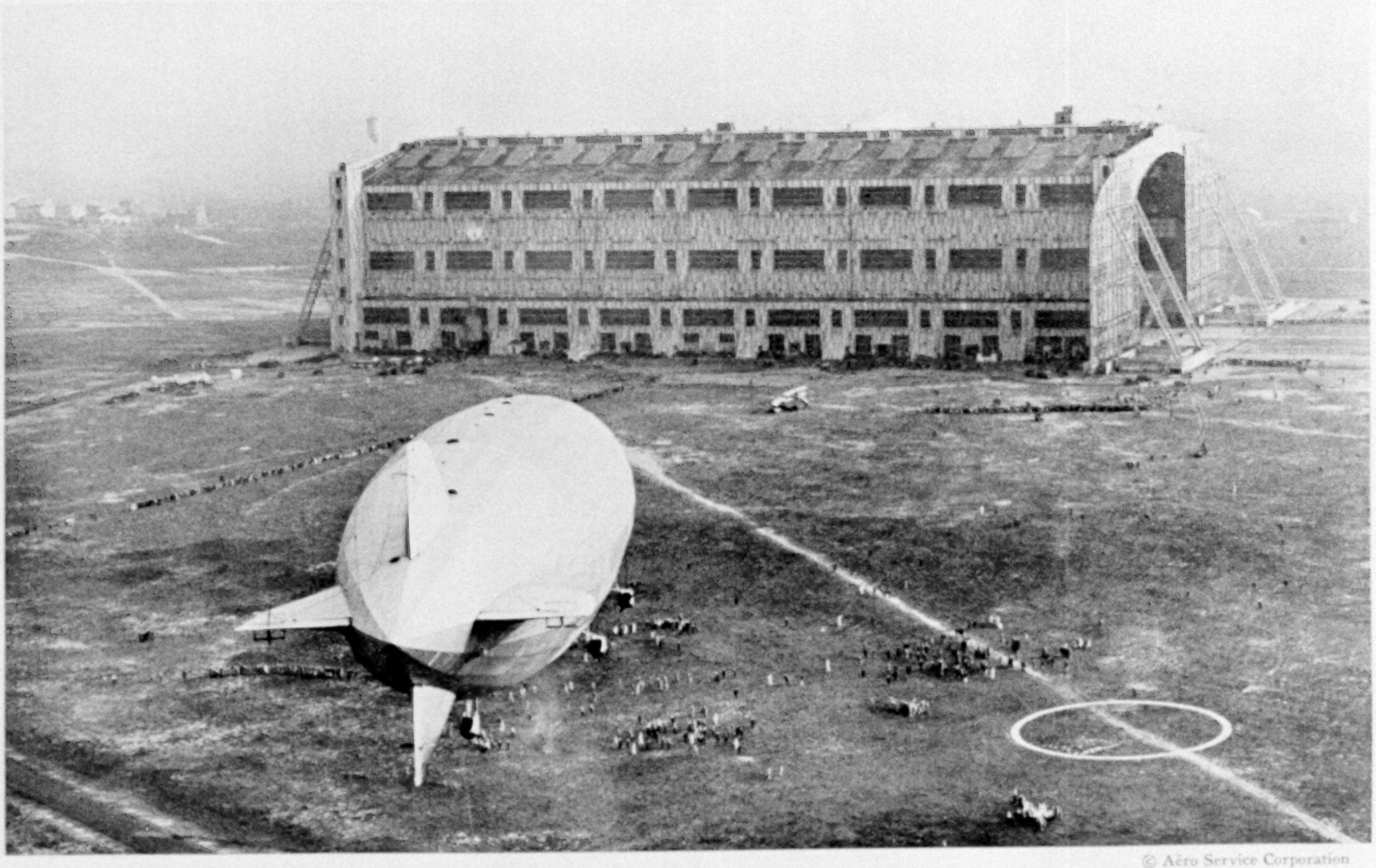
THE "GRAF ZEPPELIN'S" CHEF SURVEYS NEW JERSEY'S WAKENING COUNTRYSIDE

The man in a white jacket has become so used to traveling on the great air liner that he stands quite unperturbed by the open cabin door a thousand feet above the earth.



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THE TITANIC AIRSHIP MADE ONLY THREE STOPS ON THE WORLD CRUISE: FRIEDRICHSHAFEN, TOKYO, AND LOS ANGELES

Nine thousand dollars was the fare for a round-the-world ticket, and among the guest passengers were writers, photographers, and two United States naval officers, Lieut. Comdr. Charles E. Rosendahl and Lieut. Jack C. Richardson. The 19,500-mile journey took three weeks to complete and was accomplished in four laps: Lakehurst to Friedrichshafen, 4,200 miles; Friedrichshafen to Tokyo, 6,800 miles; Tokyo to Los Angeles, 5,500 miles; Los Angeles to Lakehurst, 3,000 miles.

Photograph by Pacific and Atlantic Photos, Inc.

STABLING A THOROUGHBRED OF THE SKIES AT LAKEHURST

Immigration and public health officers climbed into the cabin of the *Graf Zeppelin* almost at the moment she touched on the New Jersey field. Customs search was carried out at Los Angeles. At the order to "slack ropes" and lower the gangplank, the globe-circling passengers debarked for a special train to New York.

read for Dr. Eckener one of the many congratulatory telegrams received on this historic occasion:

"Byrd Antarctic Expedition Radiogram via The New York Times

"WFAT 74. S. S. 'ELEANOR BOLLING,'
"March 27, 1930.

"DR. HUGO ECKENER,
National Geographic Society, Washington, D. C.:

"As a member of the National Geographic Society, which is honoring you to-night, permit me to add my congratulations upon your noteworthy achievements in advancing aëronautics, and especially your pioneer flight around the world in a dirigible. While our Expedition was camped on the Antarctic ice we awaited with eagerness every radio message of your flight in the Northern Hemisphere. My shipmates were especially interested in your marvelous flight over barren Siberia and across the vast Pacific. They had a fellow feeling for explorers who were traversing waste places. We were delighted when, on August 28, 1929, our radio station got in direct communication with your airship while you were over Pennsylvania, on the last leg of your historic journey. My companions join me in appreciation of the observations and data collected by your countrymen, who have explored in the far south and have contributed an important part in adding to the world's knowledge of frozen Antarctica. "RICHARD E. BYRD."

CIRENAICA, EASTERN WING OF ITALIAN LIBIA

By Harriet Chalmers Adams

Author of "An Altitudinal Journey Through Portugal," "Barcelona, Pride of the Catalans," "Across French and Spanish Morocco," etc., etc., in the National Geographic Magazine

MOROCCO, Algeria, Tunisia, Tripolitania, and Egypt are on the travelers' map. Cirenaica alone of North African countries remains, with few exceptions, *terra incognita* to all save the heterogeneous peoples who for centuries have called it "home," and the Italians who govern and colonize it.

It was from Sicily that I sailed on a calm summer sea for Bengasi, capital of Cirenaica, in eastern Libia, lesser division of Italian Africa, next door to Egypt. Acquaintance with the rest of North Africa had led me to anticipate in Cirenaica a country resembling its neighbors. I found it surprisingly different.

ONCE A MECCA FOR THE ANCIENT WORLD OF CULTURE

Under the eighteen-year-old veneer of Italian civilization, this strange land remains, back of its coastal fringe, more primitive than any other country bordering the Mediterranean; yet centuries before the birth of Christ it was a mecca for men of the ancient world.

Here flowed the River Lethe past the Gardens of the Hesperides, famed in Greek mythology (see text, page 701).

Here rose fair Cirene, the only Greek city, Alexandria excepted, which flourished on African soil, exporting the rare silphium plant, cure-all for the ills of ancient man, so precious that it brought power and riches to the rulers of the land.

From the ruins of Old Cirene, in recent years, was borne to a museum in Rome that most alluring of all Aphrodites, the Venus of Cirene, which many authorities on classic art consider finer than the Venus de Melos (see page 709).

Thirty-four hours out from Sicily we sighted the low-lying African shore, with hills in the hazy distance. It was seven in the morning. The passengers hurried on deck. I was the only alien. The others were Italians, either new to Africa or returning to it after a holiday in the motherland. Two-thirds were military—bachelor officers, for the most part, and wives and children of officers stationed in the colony. Every *bambino* that could toddle was at the rail on the lookout for "father."

Long in calm waters, our little *Saluzio* now heaved on the great land swell. Out from the shore hurried launches and rowboats. Bengasi is an open roadstead. The mole, constructed by the Turks and lengthened by the Italians, is altogether inadequate, especially when winter seas beat furiously against these shores. At all seasons ships anchor far out and those disembarking pray for fair weather.

"Plans for our new port works are under way. We're spending a tremendous sum; ten years more and we'll have a real harbor," an Italian engineer on board assured me.

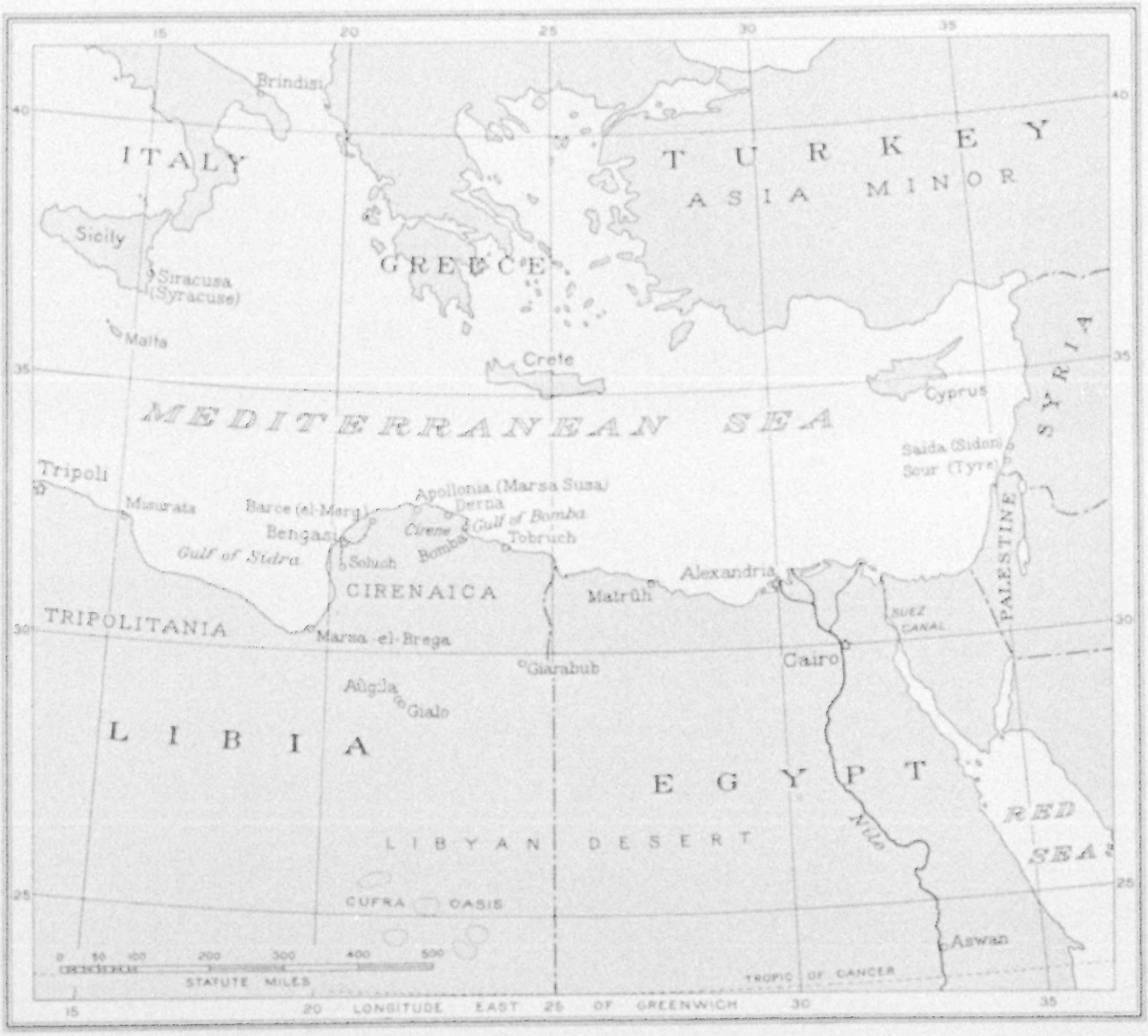
Ashore in Bengasi! The landing stage adjoins the new Italian town. I first stepped into a bit of Europe transplanted, African only in the architecture of its public buildings, of the type we Americans call "Moorish." There are a few wide avenues and an attractive little park. Alongside the new town is the native quarter—white walls, flat roofs, mosques and minarets, with a grove of date palms beyond.

"Such good fortune!" I was told. "Some years ago there was a big fire in the native town and we have practically rebuilt it." This accounts for the cleanest "Arab" settlement along the entire North African coast.

BENGASI, THE CAPITAL

Bengasi is the largest town and seat of government of Cirenaica, which is independent from its big Libian sister, Tripolitania. Italian Libia, bordered on the west and south by French possessions, on the southeast by the Anglo-Egyptian Sudan, and on the east by Egypt, ranges far inland through coastal plain, plateau, and desert, its vast hinterland still one of the least-explored regions of Africa.

The Italians claim in Libia a territory more than seven times as large as that of



Drawn by A. H. Bumstead

CIRENAICA HAS BEEN UNDER ITALIAN SOVEREIGNTY FOR 18 YEARS

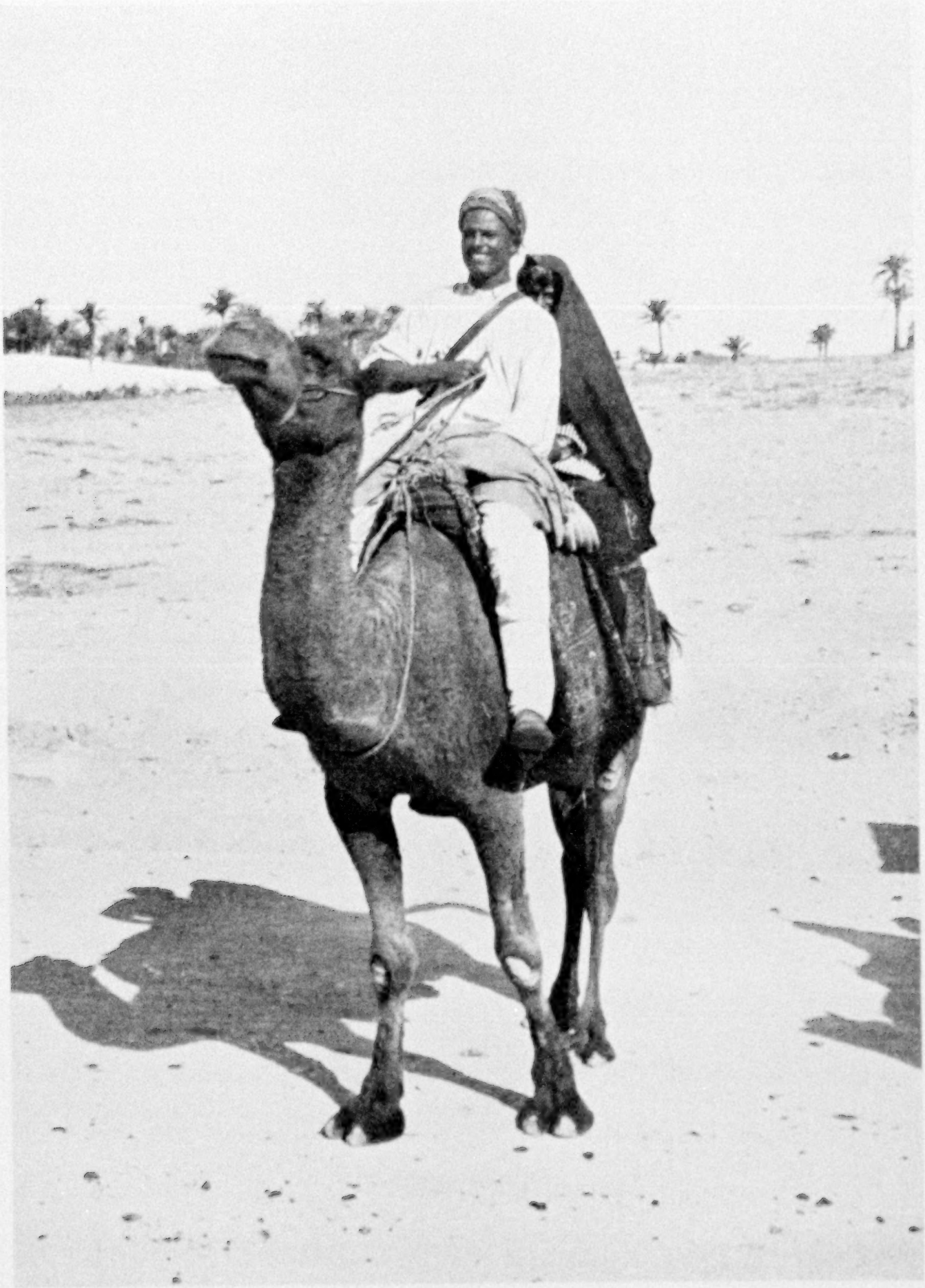
Bordering on the east Italy's larger Libian colonial possession of Tripolitania (see "Tripolitania, Where Rome Resumes Sway," in the NATIONAL GEOGRAPHIC MAGAZINE for August, 1925) is desert-skirted Cirenaica.

Italy proper, with its eastern wing, Cirenaica, occupying about one-third of this area.

Bengasi's most friendly neighbor is not African but Sicilian, the city of Syracuse, with which it is connected by weekly steamer service. Tripoli, across the wide Gulf of Sidra, is reached regularly only by fortnightly service, the steamer making every little port along the coast from Alexandria, Egypt.

It is the insignificant port of Marsa Susa, on Cirenaica's northern shore, where the land projects like a great gray bastion into the blue Mediterranean, which was once, under the name of Apollonia, the port of famed Cirene, a few miles inland on a terraced plateau. In those long-ago days Apollonia lured many a questing sail. From Greece, Asia Minor, and Crete they came; from the isles of the Ægean and far ports on the Black Sea; from Tyre and Sidon and the delta towns of the Nile; from southern Italy, Sicily, and the western Mediterranean.

Of Cirene's riches and prosperity classic history relates; ruined stone and marble tell. Here the Egyptians followed the Greeks, and the Romans followed the Egyptians; then came the Byzantines. By the time the Arabs arrived, six and a half centuries after the birth of Christ, the old Greco-Libian city had fallen into decay. Before the passing of the Turks



Photograph by Harriet Chalmers Adams

A BEDOUIN FAMILY RIDES TO TOWN ON ITS TWO-SEATER, DESERT MODEL, ROADSTER

The riding camels of Cirenaica are capable of a sustained speed of about 5 miles an hour and they can gallop much faster. A mehari, or racing camel (see illustration, page 711), can cover 100 miles in a day. These Bedouins are a happy lot and lighten their long desert journeys with laughter and song.

from Cirenaica, Barbary corsairs, too, had played their part on these storm-lashed shores.

Many are the races grafted on the original Libian, or Berber, stock. To the blood of conquerors from Europe, Asia, and near-by Egypt was added that of negro slaves from the Sudan, brought by hundreds, year after year, over the long, cruel trans-Saharan caravan trails.

MILITARY AUTOMOBILES FOLLOW CAMEL TRACKS

Greek fishermen to-day, as in centuries past, bring sponges and tunny up from the sea. Israelite craftsmen and merchants, whose ancestors came when Cirene thrived, still ply their trades in the bazaars of the coastal towns. But to-day the will of New Italy dominates this long derelict land and Italian agriculturists are teaching new ways to Berber, Arab, and black Sudanese.

The Italian plan, after conquest and pacification, has been to build modern towns beside the native coastal settlements, and to encourage native trade and agriculture. More than 100 miles of excellent highway out of Bengasi have been completed, with about the same mileage of railway. On the rocky, undulating tableland, between the coastal towns and the Libian Desert, military automobiles follow the time-worn camel tracks used for centuries by the natives. In the vast program for the future irrigation will play a star rôle in a land where springs and wells take the place of permanent rivers.

The capital already has potable water, electricity, and paved streets. Automobile and motorcycle have leaped into line beside camel and donkey.

Were you transported to the Italian quarter of Bengasi on a Thursday or a Sunday, at seven in the evening, to a balcony of the hotel facing the trim little park, you would witness an interesting ceremony.

At tables on sidewalks lining two sides of the park and overflowing on to the streets, Italians, military and civilian, are crowded. There are few women in the throng. The men sip iced beverages, with vermuth, soda, and bitters as the favorite, called "Americano" in honor of a land once famous for its mixed drinks. Newcomers are greeted in the Fascist manner, right hand upraised—the old Roman salute.

The military band in the pavilion, in the center of the park, strikes up the national anthem. All rise and uncover, hearts on the homeland across the sea. The Fascist anthem follows, and the bronzed faces of these colonists glow with patriotic fervor. After an hour's concert, the crowd disperses for 8 o'clock dinner, and for an hour or more the sidewalk cafés are deserted.

During my September visit the officers were still wearing the midsummer white uniform. Autumn here is as warm as summer; the north wind ceases to blow and the Saharan wind comes up from the south. By happy chance I missed the dreaded *ghibli*, that scorching, sand-laden wind of the desert due to arrive as summer wanes. When it blows the sea is calm.

It was on an evening following one of the semiweekly band concerts that I stood on my hotel balcony looking down on the empty street before descending to the dining room, where the inevitable eggplant and spaghetti awaited me. Two tall, white-clad natives, who during the concert had been endeavoring to sell crimson Bedouin rugs, had folded their wares and were walking away, laden with their huge bundles. With them went the merchant who had displayed over his shoulders a sheepskin nearly as large as himself, beautifully tanned, with unusually long white fleece.

A ROYAL HUNTING DOG COMES ON THE SCENE

Little Ali came up to remind me that it was dinner time. He was "chambermaid," room waiter, and self-appointed guide. He said he was an Arab from a Libian coastal town, but I am sure one of his ancestors was a "Fuzzy-Wuzzy" from the Sudan. His kinky, black hair towered above his thin brown face; he made grimaces and jumped about like an ape. But appearances are deceptive, for he was kindness personified to a rather lonely alien.

I was about to leave the balcony when from around the corner came a native boy, red fez atilt, flowing, creamy robes and flopping, heelless slippers, leading by the leash a long-limbed dog, about the size of a greyhound and the color of molasses

© National Geographic Society Natural-Color Photograph by Luigi Pellerano

WITH NO MOSLEM MAN PRESENT, THE ARAB GIRL LAYS ASIDE HER VEIL

Her face will be muffled in a shawl, however, when she goes out in public. The tattooing on the chin and the elaborate ornaments are characteristic. Cirenaica Arabs, particularly those in the coast towns, have not mixed with the Berbers but remain pure-blooded. Most of them are of the Senussi sect, a fiercely independent group, the last to yield to Italian arms.

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Natural-Color Photograph by Luigi Pellerano

NEGROES FORM A CONSIDERABLE PORTION OF THE POPULATION OF CIRENAICA

From time immemorial slaves, captured as children in raids on hostile tribes or sold to the traders by their parents, were brought from Wajanga, Borku, Wadai, and the Bantu regions to the North African coast, where their descendants are now found in domestic service or settled in their own huts outside the towns. Tolmeta, the village in the right background, occupies the site of ancient Ptolemais, which flourished in the days of the Ptolemies.

© National Geographic Society

SHE LIVES ON THE SITE OF ANCIENT CIRENE

Here once stood a mighty city founded by the Greeks about 620 B. C.

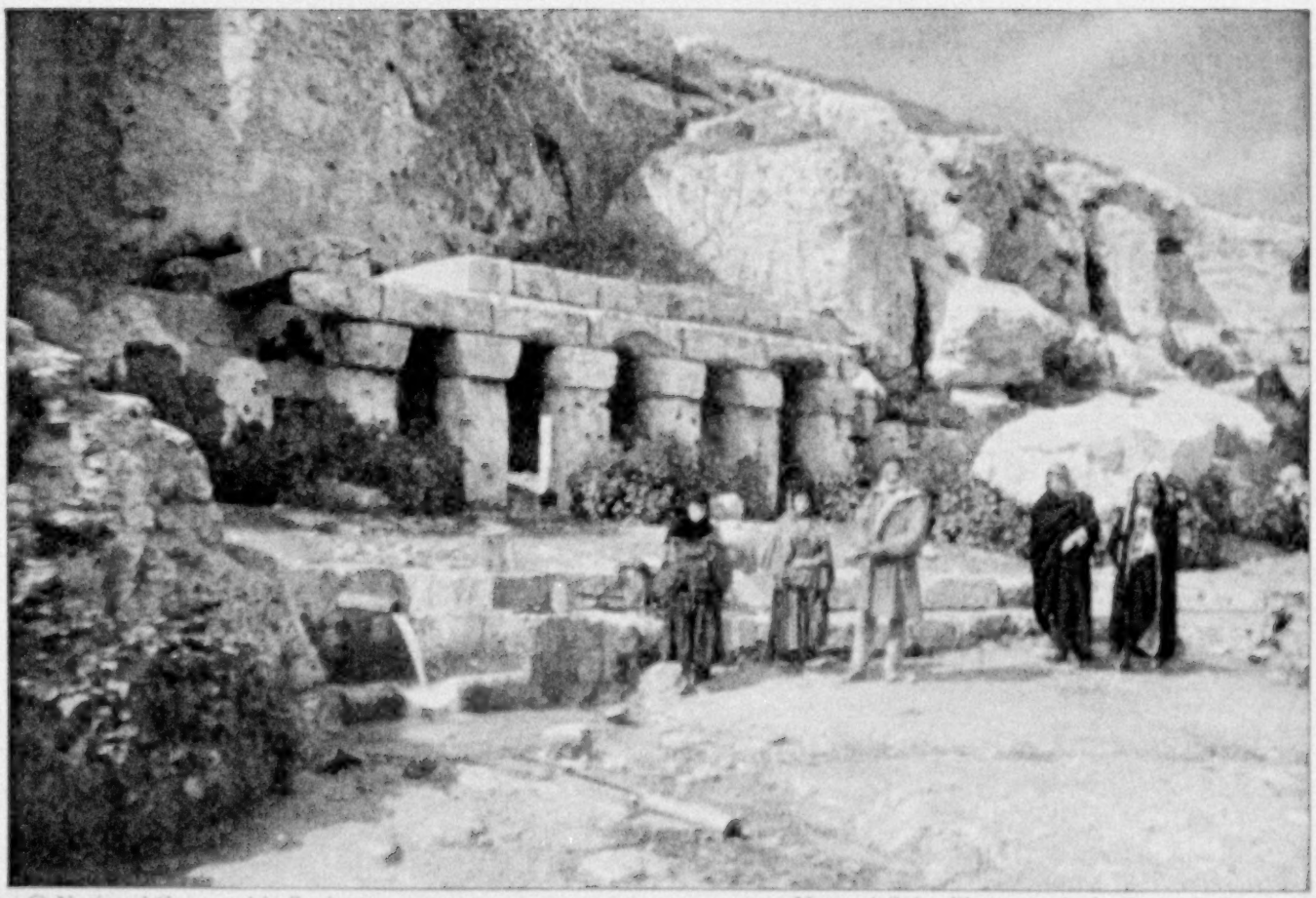
Natural-Color Photographs by Luigi Pellerano

ITALY VESTS AUTHORITY IN THE ARAB CHIEF

This dignified and venerable official is a Bengasi councilman.

NATIVE TROOPS FORM THE GOVERNOR'S GUARD

Volunteer soldiers, who enlist for an initial term of two years, are drawn from all the racial types of the country, but Berbers predominate among them.



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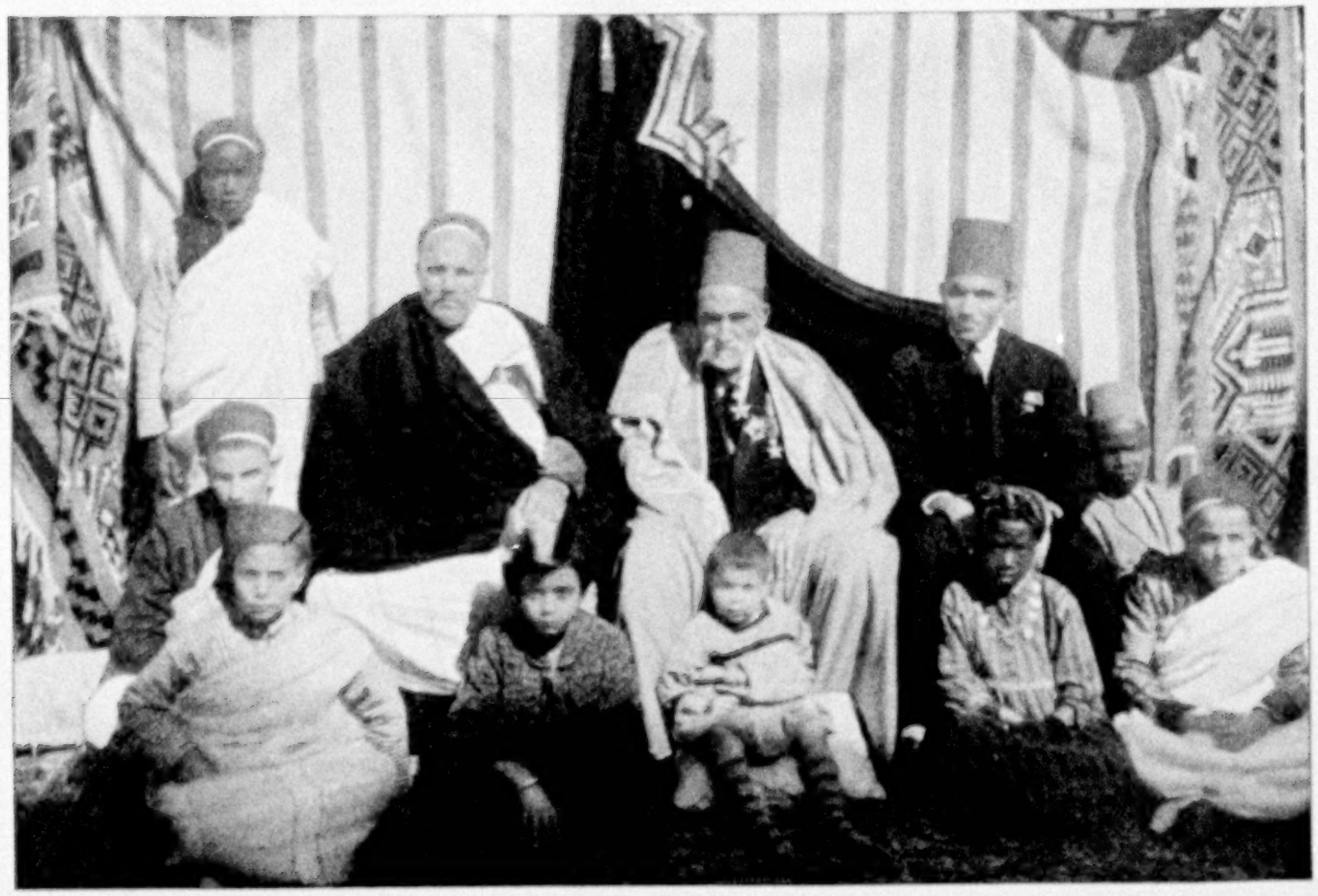
COLONISTS OF CÆSAR'S TIME ENJOYED THESE BATHS AT GUBA

Cirenaica became a Roman province 66 B.C., and remained so for four centuries. This oasis between Cirene and Derna is watered by the same spring that made it a garden spot in the days of ancient Rome. It has a flow of 30,000 gallons a day.



ITALIAN RULE HAS NOT CHANGED ARAB HOME LIFE

The old chief, seen here with his brother, sons and other male members of his household, is patriarchal head of his family and counselor to his people.

© National Geographic Society Natural-Color Photographs by Luigi Pellerano

BENGASI ARABS HAVE THEIR OWN SCHOOL

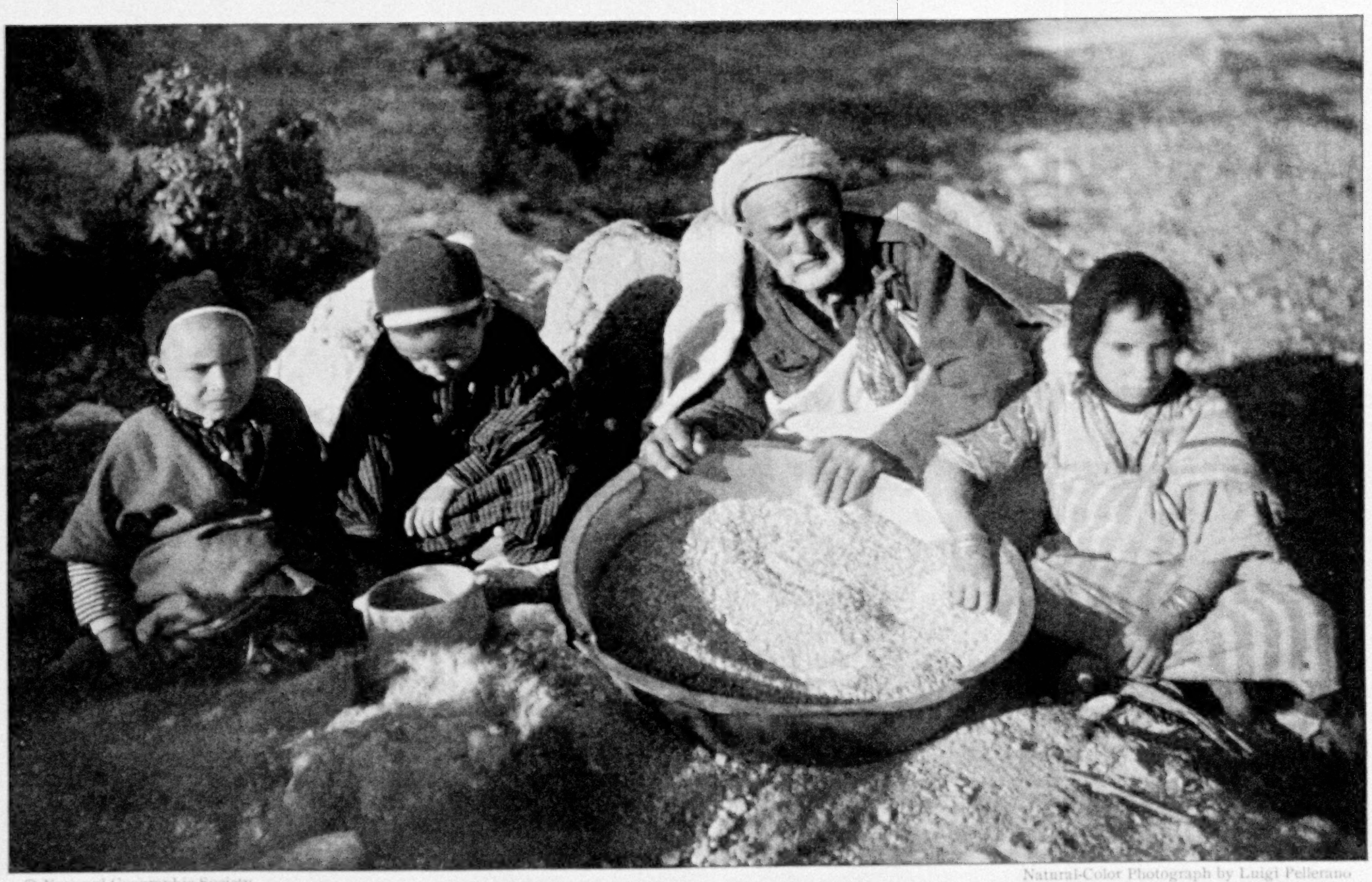
Seated on mats spread on the floor, the children of the Moslem families study the Koran as they did before the Italian occupation of the country. The Government provides a modern school, but it is attended principally by Jewish pupils. No color line is drawn among these people.

© National Geographic Society

Natural-Color Photographs by Luigi Pellerano

ARAB GIRLS DELIGHT IN BRILLIANT ATTIRE

Rich ornaments in silver and gold are common among the young women of Bengasi. The chaplet and necklaces are composed chiefly of Austrian coins stamped with the heads of Maria Theresa and Emperor Josef. The wide bracelets, intricately chased, are of native workmanship.



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Natural-Color Photograph by Luigi Pellerano

BARLEY IS THE PRINCIPAL FARM PRODUCT OF CIRENAICA

In the days of the Greek and Roman colonies, spring-fed irrigation systems made a garden spot of the country about Derna, and it is still the best agricultural district in northern Libia. To-day, however, little is grown save the hardier cereals. The grain which the old Arab and his little helpers are cleaning is of a high quality much sought by maltsters in Europe and England.

BEDOUIN CHIEFS COMMAND TRIBES NEAR TOLMETA

Ancestors of these people came into Libia some seven centuries before the dawn of the Christian era.

© National Geographic Society Natural-Color Photographs by Luigi Pellerano

THE ARAB GIRL CLINGS TO HER TRADITIONAL COSTUME

Though the veil is no longer deemed necessary save in city streets or in the presence of Moslem men, the rest of the attire remains unchanged. The rugs upon which the young woman reposes are imported from Tripolitania and Turkey, but the pillows of decorated leather are made in Cirenaica.

candy. Down I rushed to follow the pair, for here, at last, was a genuine *slughi*,* that rare canine whose lithe, graceful form I had seen in bronze in a museum in Morocco, excavated from the ruins of Volubilis, the westernmost military post and granary of the Romans in North Africa.

THE SLUGHI IS OF ANCIENT LINEAGE

The slughi is a descendant of the Persian gazellehound, the type of dog pictured, in archeological finds, in the Assyrian chase. Some believe it was the Persians who, during a temporary period of conquest and plunder, brought the one-humped Arabian camel, long known to Egypt, into Libia. Perhaps this royal hunting dog came west at the same time.

Next day I asked an Italian sportsman about this beautiful dog of ancient breed, with flowing silky fleece on its ears, feathery tail, and large, intelligent eyes. He said the type was rare in Cirenaica, but to be met with in considerable numbers about Misurata, in eastern Tripolitania, across the Gulf of Sidra. These dogs are fast runners and hunt by sight rather than by scent.

"And what," I asked, "do you shoot around Bengasi?"

"Doves and quail," he told me, "sandgrouse, red-legged partridges, and pintail ducks; the big salt lagoons behind the town teem with waterfowl at certain seasons. And there are gazelle some miles back on the plateau."

Herds of gazelle and antelope are scarce now, I learned. So are wild boar and wild Barbary sheep. The latter, native of the Atlas Mountains, to the west, are intermediate between sheep and goat, pale brown in coloring, with big, wild eyes. Their massive horns curve backward and downward and long, whitish hair droops from throat, chest, and forelegs.

Cirenaica has no true mountain range; only a limestone shelf a little back from the sea, forming the face of a plateau which declines to the south as it merges with the Libian Desert. This mountainless country hardly seems the habitat of Barbary sheep, but eminent Italian naturalists assured me that these shy animals are still to be found in eastern Libia.

* See the National Geographic Society's publication, "The Book of Dogs."

In the centuries since the Greeks founded their most westerly port on these shores, the physical geography has changed in the neighborhood of the Hellenic Hesperides, which became the Berenice of the Egyptians, the Bengasi of to-day. In some cases the sea has made inroads, submerging villages; in others, inlets, once connected with the sea, are now mere isolated salt lagoons, nearly dry in summer.

It was the Bengasi sportsman who told me about the famous "lost river" a few miles back of the town, flowing through an underground cavern which he had partially explored. Some authorities claim that this is the River Lethe of twenty-five centuries ago. Strabo wrote of it, and Pliny the Younger:

"Here Lethe's stream, from secret springs below, rises to the light; here, heavily and slow, the silent, dull, forgetful waters flow."

But the Gardens of the Hesperides, where maidens guarded the golden apples, in the Land of the Lotus-Eaters! Was this sacred grove near the port of Hesperides, or back on the heights of Cirene, where gardens still exist?

There is local indignation against a writer who once described Bengasi as "Tripoli's little country cousin." The city boasts a cathedral, a fine new stadium, Italian and Arab schools, and hospitals where the prevalent eye trouble (trachoma), typhus, and malarial fever are among the diseases treated.

"But we are fortunate in having fewer pests by far than countries to the east," said the doctor in charge. "The health of our colonial troops is excellent."

BENGASI IS PROUD OF ITS FINE AIRPORT

Bengasi is justly proud of its airport, where British and French as well as Italian airplanes alight. The airdrome is spacious and well equipped. Plans are under way for the construction of a fine landing station for seaplanes. In flying to Europe the usual route is along the north Cirenaican coast to Tobruch and across the Mediterranean to Brindisi.

I was impressed with the municipal bazaar, so clean and well conducted, which consisted of one long, narrow covered street, with booths on each side.

Photograph by Gabinetto

TWENTY-SIX HUNDRED YEARS AGO GREEK COLONISTS FOUNDED THE CITY OF CIRENE

Taking advantage of a location which combines a rich, tillable soil, magnificent scenery, and a strategic commercial position, early settlers established their city beside the Fountain of Apollo, the most important spring on the face of the Cirenaican plateau. At the left are ruins of a temple raised to the Sun God.

AT GIALO, ON THE BORDERLAND BETWEEN STEPPE AND DESERT, ITALY MAINTAINS A MILITARY OUTPOST

Photographs by Vittorio Dimani

PRACTICE MANEUVERS KEEP ITALY'S COLONIAL TROOPS IN TRIM FOR ANY EMERGENCY

Photograph by Vittorio Dimani

HIS INSTRUMENT SUGGESTS A GREEK SHEPHERD'S PIPE

The youthful Cirenaican performer can claim a mixed ancestry, partly Sudanese. Except in his moments musical, he usually wears some clothes, in deference to Italian feeling on the subject.

If you are on a shopping tour in Bengasi, remember that there are two holidays a week in the native quarter. Here the Moslem shops close on Friday, the Israelite on Saturday. Of the 32,000 inhabitants of the city, more than 20,000 are Mussulmans of mixed blood, chiefly Berber and Arab; about 8,000 Italian Christians, and 3,000 Israelites. There are less than 200,000 people in all Cirenaica.

AN ASCENT OF A MINARET

How often in Moslem countries I have heard the muezzin, high up in the minaret attached to the mosque, call the faithful to prayer; but not until last autumn, in Bengasi, was I permitted to ascend one of these towers; and I am now convinced that the man who, year after year, toils up that narrow winding stairway five times each day is sure to reach heaven eventually.

My Moslem guide produced a huge key and unlocked the door of the tower, which we entered from a courtyard attached to the shabby little mosque. It was dark within the tower and the crescent-shaped steps of the steep spiral stairway were covered so deep with an accumulation of sand I could barely secure a footing.

Up, up we climbed to a narrow circular platform, from which we looked down on the flat roof of the mosque. From it, in regular lines, rose many small white domes.

On all sides of the mosque were the flat roofs and open courtyards of houses occupied by Moslems or Hebrews. One courtyard was nearly covered by a gigantic grapevine; from under its shade came the sound of music—drum, flute, and primitive guitar. In another court a slim, dark-haired Rebecca, wearing a vivid blue garment, was filling her pitcher at a well. Beyond the closely massed white buildings heaved the restless blue sea, with a line of gray rocks stationed like sentinels along the shore.

The municipal caravansary, or *fonduk*, is a walled inclosure where the camels of the caravan are unloaded. Here, within arcades, the camel drivers lounge, or drink coffee in the adjoining café, indulging in a game which resembles backgammon.

Among these Bedouin cameleers, with their deeply furrowed, leathery faces, and small squinting eyes burned by a merciless sun, unloading, from large bags of camel's or goat's hair, the barley, raw

wool, carbon, and fagots brought from the far interior, I stepped on to the trail of romance (p. 707).

This trail I followed past the now disused walls and forts erected for defense during the early years of Italian occupation, past the dry bed of a great lagoon, where men were shoveling white salt into glistening pyramids, on to that stony steppe which separates the more fertile coastal plain from the Libian Desert. Once off the paved highway, the sturdy motor plowed its own road among the camel tracks.

There were no trees; only the stunted *macchia* bush and yellowish grass which the camels eat; the reddish-brown earth. But in the cobalt sky were banked, row on row, those great gleaming white cumulus clouds which are the glory of Cirenaica. High above soared an eagle.

Photograph by Harriet Chalmers Adams

CIRENAICAN BABIES GET PLENTY OF VIOLET RAYS

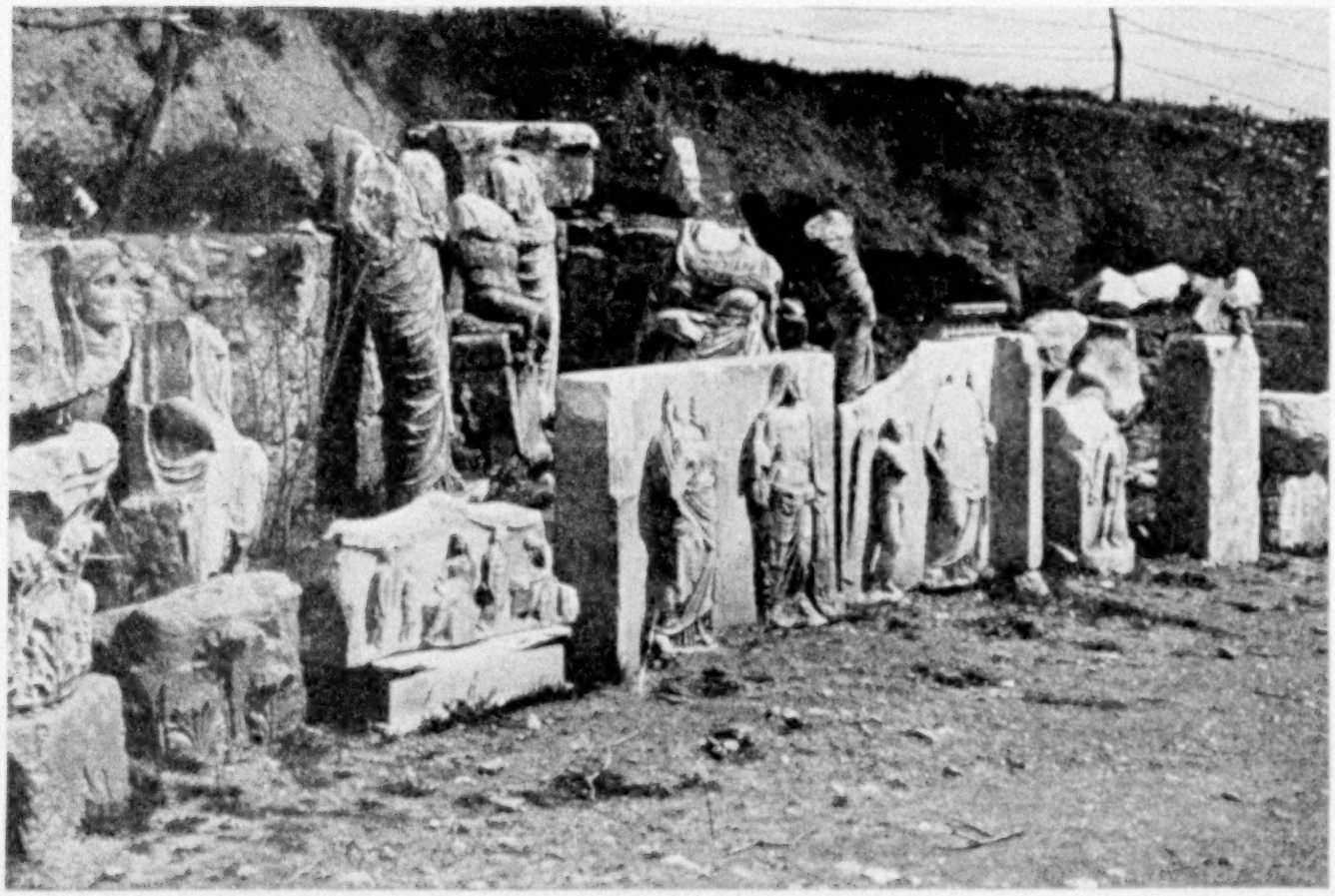
Sometimes the desert children get so much sunshine that their eyes are injured by its glare. Under the Italian régime wonderful strides have been made in educating the people along the lines of health and sanitation. The father's efforts to shield his baby's eyes afford an evidence of this.

Here the striped hyena, the jackal, and the fox prowl by night about the dark tents of the Bedouins, around which huddle the domesticated animals—camels, donkeys, sheep, and goats. When left to their own devices, camels flock like sheep.

IN THE HOME OF THE CIVET CAT, FRIEND OF PERFUME MANUFACTURERS

This is the home of the civet cat, known locally as the *zibetto*, from whose pouch is obtained a fatty substance with a strong musky odor which, shipped to Europe, is combined with other scents to form the rarest perfumes. It is the native heath of the strange Libian wild cat, known elsewhere as the Egyptian, the veritable type from which, before the dawn of history, the beloved puss of our hearths was evolved. In its wild state this Libian cat, about the size of a domestic tabby, is of a yellowish color, with pale stripes on its body.

An interesting little animal of the sandy wastes is the tiny, pugnosed jerboa, a relative of our North American jumping mouse of woods and fields. It is about seven inches in length, with a tufted tail longer than its body, and fawn-colored



Photograph by Vittorio Dimani

FRAGMENTS OF SCULPTURE TELL OF A DEPARTED GLORY

The Greek founders of Cirene were followed by Egyptians, Romans, Vandals, and Byzantines. When the Arabs arrived, in the seventh century A. D., the city had fallen into decay. Only Italian archeologists are now allowed to excavate in Cirenaica.

skin which matches the sand. It makes tremendous leaps and is said to outdistance a horse. An acquaintance of mine has tamed one, and it makes a most amusing pet.

Across this lonely Libian land of great vistas, camel caravans for centuries have made their way from the southern desert to the sea. No longer do they bring ostrich feathers, ivory, gold dust, and ebony slaves up from the Sudan.

Dates and skins are among the products of other days which still come to Bengasi over toilsome desert and steppe; but the greater portion of the trans-Saharan traffic, once directed to Mediterranean ports, now finds its way out via Senegal or the Upper Nile. Skins from the Sudan are shipped to Italy and America, to be used in the manufacture of gloves and shoes.

East to west across Cirenaica, where the steppe meets the rocky desert, stretches a chain of oases, a continuation of those across Tripolitania, each with its wells and palms, its mud-walled village. Ancient writers referred to these oases as "The Islands of the Blest." The word "oasis" signifies an abiding or resting place. Those of Cirenaica are really depressions in the surface of the plateau, where springs, or wells, tap the water-bearing sandstone.

From the oases of Aùgila and Gialo, far to the southeast of Bengasi, these gardens of the desert extend east to the oasis of Giarabub, ceded by Egypt to Italy in recent years, and across the Cirenaican frontier to the oasis of Siwa, in that part of Egypt known locally as the Western Desert.

THE LIBIAN DESERT HAS NUMEROUS STEPPING STONES—OASES

Herodotus wrote of Aùgila, where the greatest number of pure-blooded Berbers is still to be found. From Gialo ancient trade routes strike south to the oasis of Cufra (Kufra), with its several villages and palm-fringed lake. "The desert is a sea," the natives say, "and Gialo is its port."

The Libian Desert is of three types—rocky, pebbly, and sandy. The sandy

Photograph by Harriet Chalmers Adams

DESERT FOLK BRING THEIR GOODS TO THE CARAVANSARIES TO SELL

On the outskirts of Bengasi is such a congregating place, with facilities for display and for taking care of the wants of both man and beast. The bags of these Bedouins are of home-spun camel's or goat's hair and are used to carry grain and wool (see, also, text, page 704).

desert, which lies along the frontier of Egypt, has high, billowy sand dunes running in long lines from northwest to southeast, held together by scanty vegetation and collecting through the wind all the swirling sand of the neighborhood. East to west travel here is very difficult, even for experienced natives. It means the ascent of each high dune and a sheer drop on its western side. Some of the valleys between the dunes are blocked with soft sand, in which the camels sink knee-deep; others, strewn with fossil shells, have a harder surface.

The natives make these oases, occupied from a very remote period, stepping stones to the northern plateau and the sea. Since the pioneer expedition of the German explorer, Gerhard Rohlfs, to Cufra in 1879, a few other foreign adventurers, with years' intervals between, have braved the hardships and dangers of the Libian Desert. Not many years ago the Egyptian explorer, Sir Ahmed Hassanein Bey, made his second expedition from Gialo to Cufra, and continued south to the Anglo-Egyptian Sudan, crossing a heretofore-unmapped portion of the desert.* Between Cufra and that southern part of Tripolitania to the west, known as Fezzan, oases may yet be discovered. Straight east from Cufra, separated by a stretch of only partially explored waste, lies Aswan, on the Nile.

I talked with an Italian aviator who had recently flown over Cufra, making the round trip, from the fort at Gialo, in six hours, a distance which would have meant weeks of hard caravan travel.

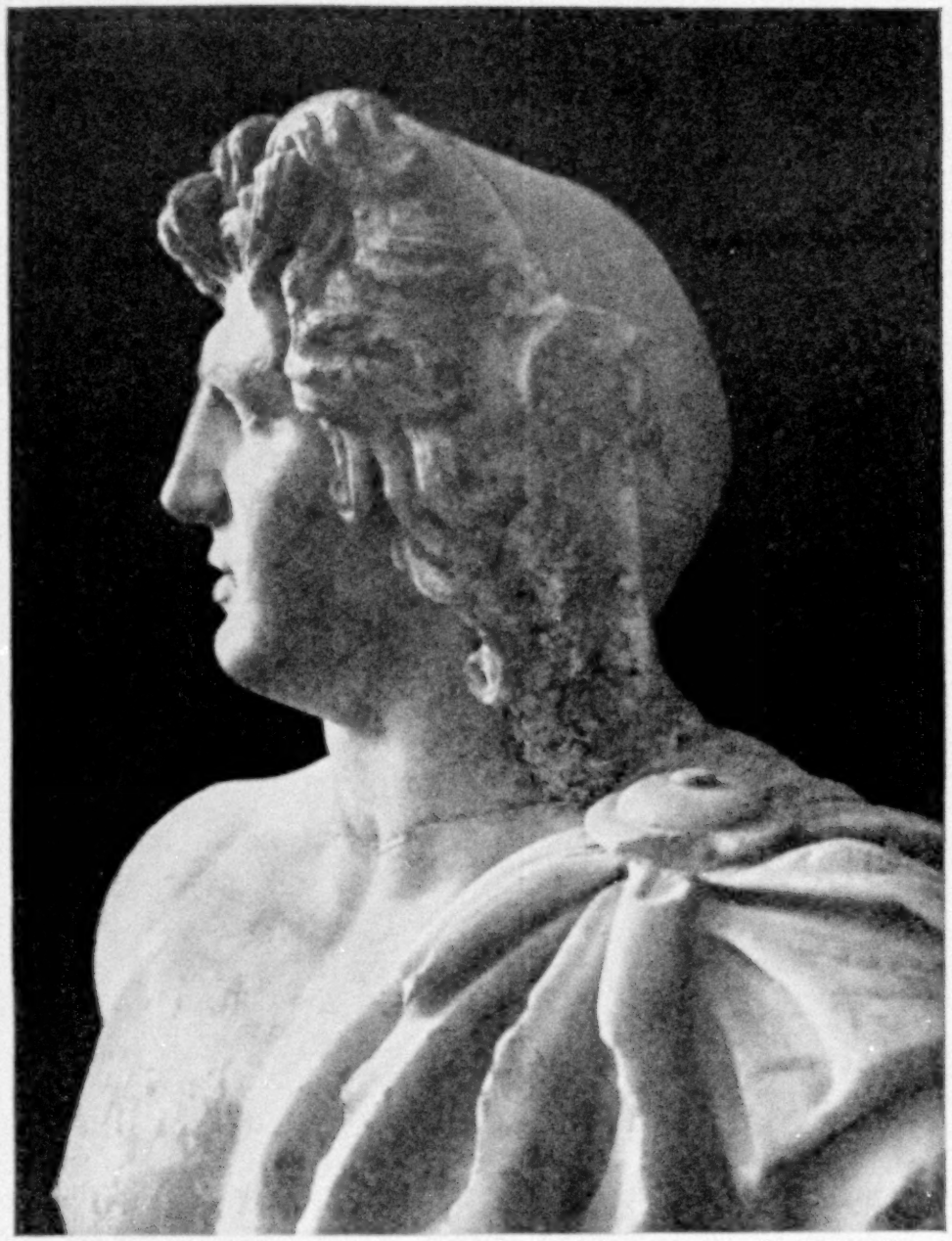
"It was wonderful," he said, "to see the green palms and the shimmering lake,

* See "Crossing the Untraversed Libyan Desert," by A. M. Hassanein Bey, in the NATIONAL GEOGRAPHIC MAGAZINE for September, 1924.

Photograph by Harriet Chalmers Adams

A LORD OF THE LAND STOPS FOR A SHINE IN BENGASI

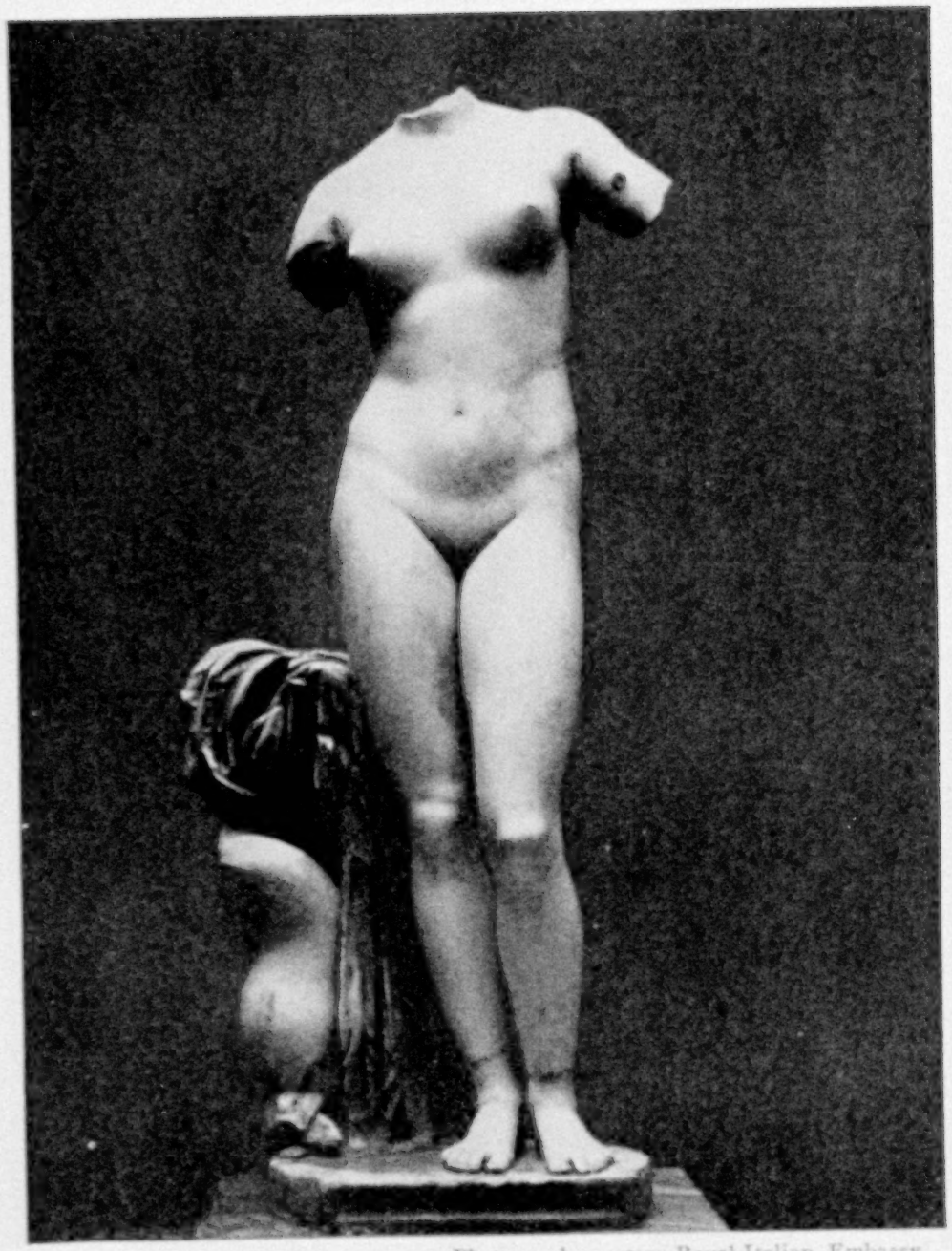
The people of Cirenaica take more kindly to European administration than do some of the other North African peoples. Smiles are no rarity among them.



Photograph courtesy Royal Italian Embassy

ALEXANDER THE GREAT: ONE OF THE ART TREASURES UNEARTHED AT CIRENE

On his visit to the Oasis of Siwa, shortly before he left Mediterranean shores for his conquest of Asia, citizens of Cirene sent a delegation to Alexander to swear allegiance to the great Macedonian.



Photograph courtesy Royal Italian Embassy

AN UNKNOWN SCULPTOR CREATED THE LOVELY VENUS OF CIRENE

This superb figure, now in a Roman art gallery, lay buried for centuries. In December, 1913, a severe storm washed away some of the covering soil at Cirene and redisclosed its beauty to the world.

Photograph by Vittorio Dimani

A BEDOUIN GIRL AT A DESERT WELL

Her uncovered countenance is evidence of her country origin. Water is so precious on the desert that the wells are often covered to prevent evaporation and to keep the supply cooler and cleaner.

Photograph by Gabinetto

A HEAD OF OLYMPIAN ZEUS FOUND AMONG THE RUINS OF CIRENE

after that wilderness of orange-colored sand!"

The aviator did not alight. Relations between the Italians and the Senussi, who occupy Cufra, are not of the most friendly.

THE SENUSSI SECT HAS SUCCESSFULLY WITHSTOOD WESTERN CUSTOMS

The Senussi are not a race or a tribe, but a fiercely religious and fanatical brotherhood with political power. The order, founded by a descendant of the Prophet, born in Algeria in 1787, swept from Morocco to Arabia and south across the Sahara. The oasis of Giarabub, where the founder died in 1859, is now a Senussi shrine. Here is the tomb-mosque of the Great Senussi; here the chief *zawia*, or center of education.

There are, in Cirenaica, about 40 of these zawias, combined centers of Senussi education and propaganda and homes of the local teaching brothers, who offer three days' free hospitality to passing Moslems.

In each village is a personal representative of the hereditary Senussi leader, who lives in Cufra.

The rules laid down by the founder were very strict. His followers were forbidden all intercourse with Christian or Jew; all luxuries, including the use of tobacco, snuff, coffee, and alcoholic drinks. This resulted in the inordinate use of tea.

Dancing and attempts at magic were forbidden and only women were permitted to adorn themselves with gold or jewels. To any violating these rules a terrible punishment was meted out.

During the early years of Italian occupation fierce battles were fought between the Italian soldiers and natives of the Senussi sect, who jealously guarded the ancient trade routes of the desert. It has been estimated that the conquest and pacification of Libia cost Italy 100,000 men and a billion dollars. In 1917 a truce was signed between the Italians and the British officials on the one side and the Senussi leader on the other. The latter was given a certain sum annually, control of tribal affairs in the desert, and the promise that Western innovations would not be thrust upon his people. In return he agreed to keep peace on Italian and British outposts and permit unrestricted commerce.

Several years ago a misunderstanding arose, and at present the Italians of Cirenaica are not pushing their garrisons south of that line of oases stretching from Aùgila to Giarabub. Only an occasional daring birdman, in full realization of the risk, skims over enemy territory.

The veiled Tuaregs, long noted as raiders, are the Berbers of the desert, and the ancient Berber tongue is still spoken among several of the tribes of the Cirenaican hinterland. Among the Tuaregs it is the men who wear the face covering, while the women go unveiled.

THE CAMEL IS CIRENAICA'S MAINSTAY

In Cirenaica the camel plays an important rôle. It supplies milk, meat when

mutton is scarce, fuel, and hair for the making of tents, ropes, bags, and garments. The incinerated remains of its droppings are exported in the form of sal ammoniac, one of the oldest of all exports from this part of the world. According to tradition, it was the ancient Libians who first distilled ammonium chloride from camels' dung, naming it after the oracle of Jupiter Ammon, in the oasis of Siwa, famous 1,300 years before Christ. To this oracle countless pilgrims traveled by camel caravan.

One load carried by the draft camel of Cirenaica is for its own benefit. This is sulphur, mined in the country and borne great distances by caravan, to be used in curing mange.

"Camels' mange! That's not what worries me in the desert," said an Italian explorer who was telling me of his experiences. "I'm always on the lookout for camels' ticks!"

Photograph by Riccardo Saver

A NATIVE BARBER OPERATES "UNDER THE BLUE"

In Cirenaica the profession of hair cutting and shaving is combined with that of bloodletting and other minor surgical operations.

He said that puff-adders, scorpions, tarantulas, and horned vipers were the pests of the oases.

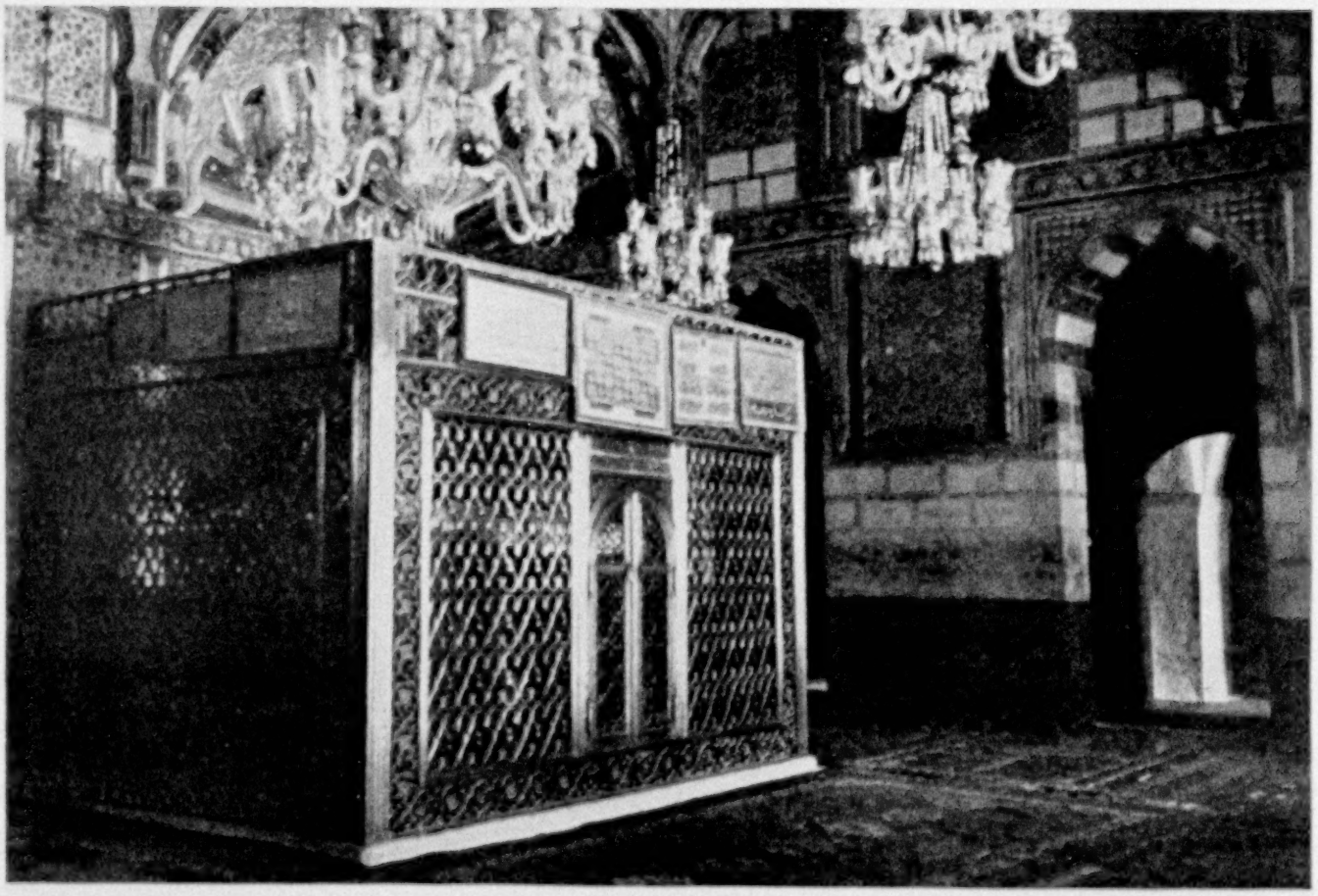
One of the scenes I recall most vividly in eastern Libia is associated with camels. I was sitting with my camera, on a hillock in the country, beside the Bengasi-Gialo trail. There was not a moving object in sight. But my eyes were on the horizon, where I hoped a caravan would come into view.

After an hour my patience was rewarded. But this was not the usual sober line of slow-moving, heavily laden beasts. Instead, snatches of high-pitched, tremulous song came to me on the south wind, and, after a time, a number of riding camels came up. On each sat a young man, with a young woman, unveiled, behind him. From their tents on the lonely steppe, these Bedouins were bound for a holiday in Bengasi.

The women were enveloped in black woolen garments as a protection from the sun, so I could not see their black hair, oiled and braided. Their chins were tattooed, eyelids darkened with *kohl*, lips painted scarlet, and heavy silver bracelets encircled their ankles. How free were these Bedouin women, as compared with their secluded town-bred sisters!

ITALIAN COLONISTS HAVE BUILT A FINE STADIUM AT BENGASI

Starting each year on September 20 and continuing for six days, the Italian residents of Cirenaica hold a great sports carnival here, with horse racing, football, foot races, and many other athletic activities.



Photographs by Vittorio Dimani

A SHRINE IN GIARABUB OASIS SACRED TO FOLLOWERS OF THE GREAT SENUSSI

Cut-glass candelabra and electric lights have replaced the beautiful old lanterns that formerly illuminated the tomb of the founder of a powerful, fanatical Moslem religious order which has stoutly resisted European penetration in Cirenaica (see, also, text, page 710).

Photograph by Riccardo Saver

FLAG BEARERS LEAD A MOHAMMEDAN RELIGIOUS PROCESSION

In Cirenaica, as in some of the other countries of the East-West borderland, many faiths are encountered and at least three days of the week are regarded as holy. Friday is sacred to the Mohammedans, Saturday to the Jews, and Sunday to the Christians.

Photograph by Harriet Chalmers Adams

AN ARAB GRANDMOTHER SEPARATES THE GRAIN FROM THE CHAFF

While the men who raised it are enjoying themselves at the café and her younger sisters are engaged in relaying the latest desert gossip, this aged worker fills and refills her homemade palm-fiber basket with clean, salable grain.

Photograph by Vittorio Dimani

DOMES AND MINARETS RELIEVE THE FLAT-ROOFED SKYLINE OF BENGASI

The houses of the Cirenaican capital are for the most part built of stone or concrete, their long, narrow rooms opening on a square interior court. The older part of the city is predominantly Arab and, as in most Moslem towns, mosques are prominent. Under the Italian régime the population of Bengasi has about doubled, while its prosperity has increased many fold.

In Cirenaica, where the tourist is not yet in evidence, the natives coöperate willingly with the photographer. The exception is the fat Sudanese "mammy," who is superstitious and covers her face from the camera's evil eye.

I was even asked to bring my camera into a Moslem cemetery on Friday, the day of the week given over to women visitors. They sat in groups on the ground around a charcoal brazier, boiling water for tea. Little girls flitted from one grave to another, with dishes of food and water for the birds, sky-bound messengers to departed dear ones.

Among the most picturesque of the types in Cirenaica are the soldiers from the Italian colony of Eritrea, on the Red Sea. They are taller, thinner, and darker than the native soldiers of Libia, have great dignity of bearing, and wear a distinctive uniform, with red and green trimmings and a very high, tasseled headdress.

Back once more in the coastal zone, our route follows the curve of the Mediterranean, from Bengasi on the west to Tobruch on the east. Of the ports known to the ancients, only Bengasi and Derna have been continually occupied through the centuries.

ITALY HOPES TO DEVELOP THE AGRICULTURAL RESOURCES OF NORTH CIRENAICA

Here, on Cirenaica's great northern promontory, where there is rich, easily tilled land and a bracing climate, lies Italy's hope for agricultural development, an outlet for her teeming millions.

Barley is the chief crop, some of it going to Scotland to be used in the manufacture of whiskey. Olives thrive along the coast. The broomlike esparto grass, growing wild on the steppe, is woven into matting by the natives and also shipped to Europe to be used in the manufacture of paper. Italian colonists are planting orchards and vineyards and sowing fields. There is a governmental penal colony, agricultural and industrial.

The country around the inland town of

Photograph by Vittorio Dimani

WHERE ITALIAN ENTERPRISE HAS REARED A NEW CITY

A community of fine, wide boulevards, parks, and well-built structures adjoins the old native quarter of Bengasi, and it has been created in the face of great difficulties. Not long ago the park at the left was a salt mound. This was removed, soil brought in from a distance and fertilized and cultivated into the beauty spot it is to-day.

Barce, reached by highway and railway from Bengasi, is especially fertile. The village, on whose site the modern Italian town is built, was long known as El Merg (The Pasturage) by the natives, but the ancients called it Barca, and in pre-Italian days this was the name of the entire country. It was founded by dissenters from royal Cirene and thrived long after the decline of the older city.

After barley, the export of sponges ranks second—an ancient industry in this part of the world. Greek warriors of old used sponges for padding their helmets.

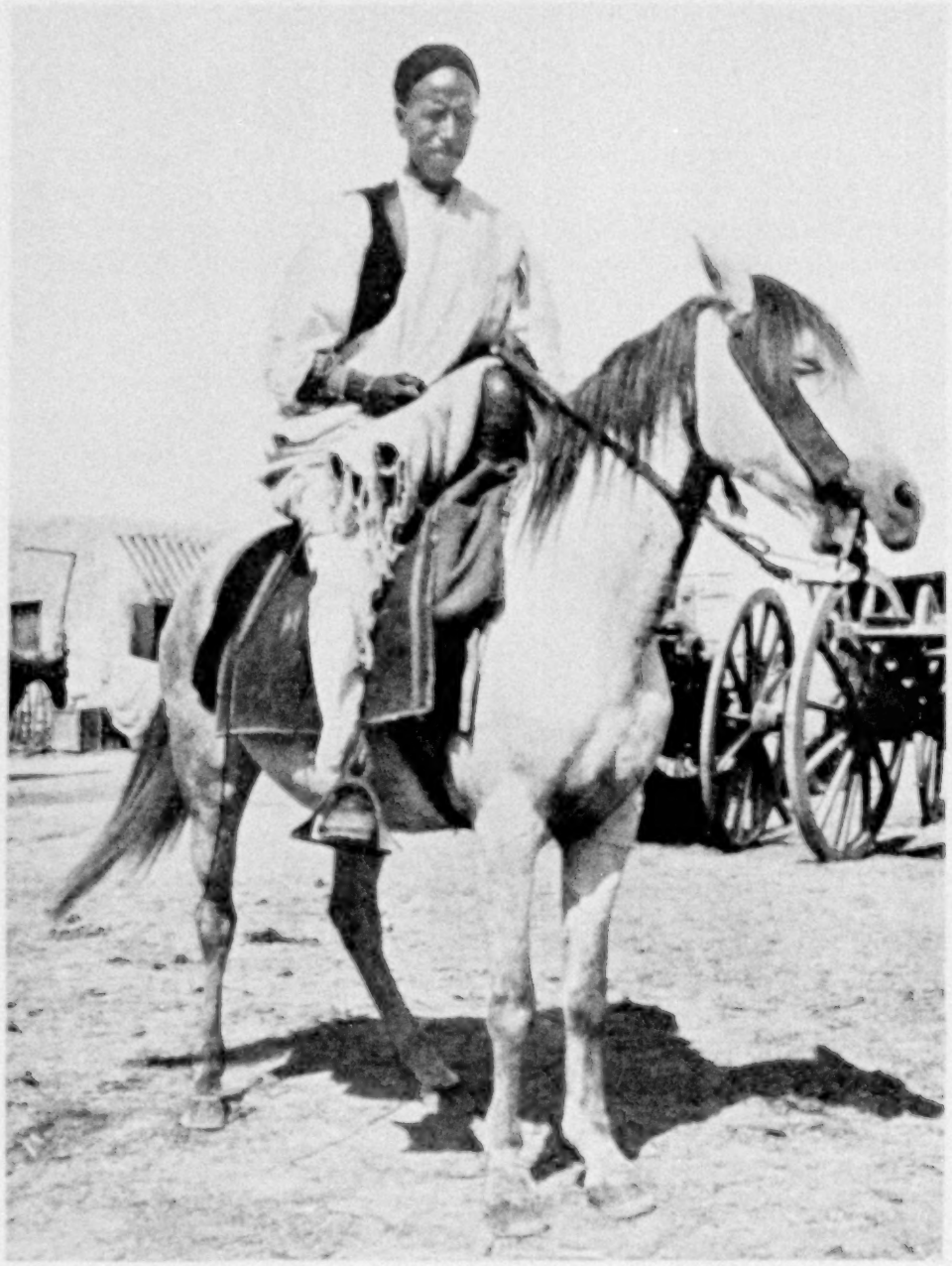
In the eastern Mediterranean, from Tunis to western Egypt and off the islands of the Ægean, stretch the sponge colonies. Between April and October the Greeks engaged in this industry are at work off the Cirenaican coast from Marsa el Brega, on the Gulf of Sidra, to the Egyptian frontier and along the coast of Egypt as far as Matrûh, where Antony and Cleopatra once had their summer villa. The cup-shaped sponge of finest quality is native here, and from these waters it has been transplanted to other parts of the world.

I saw various types and grades of sponges brought up by helmeted divers and by men diving without equipment. A man plunges down carrying a heavy stone in his hand, pulls up a sponge, drops the stone and shoots to the surface. Few of these men live beyond the forties.

Tunny fishing is another important and steadily growing industry off this northern coast.

At intervals along the edge of the coastal plateau and even far inland stand forts, locally called *kasrs*, used by the Roman legions and probably older than the Roman occupation. In some of these hoary, high-walled, nearly windowless castles, Italian soldiers are now garrisoned.

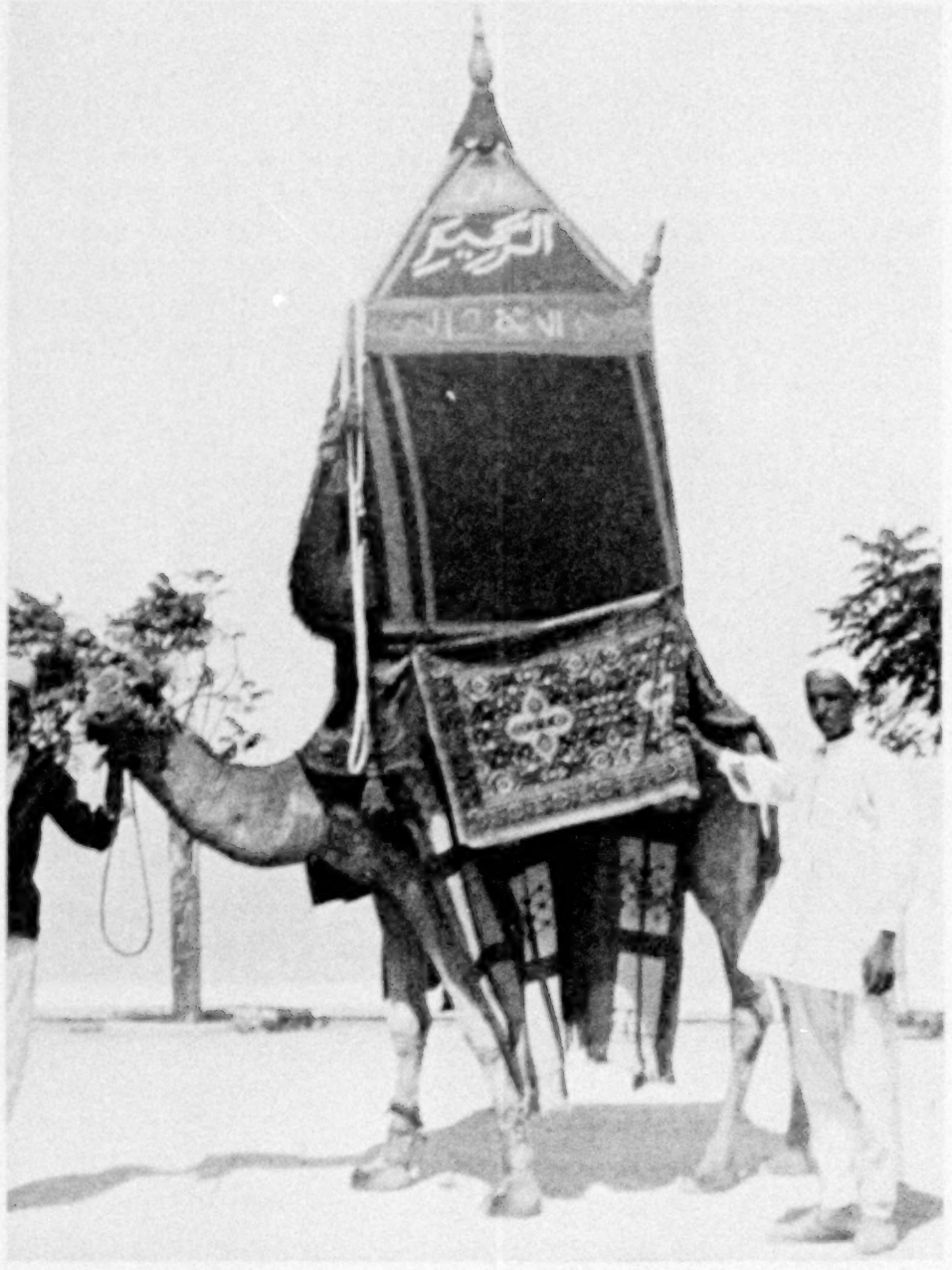
The great Roman military highway, stretching from Morocco to Egypt, loomed out of the mist of centuries one day when I saw, cut deep in a rocky road, the tracks of chariot wheels. The grooves were



Photograph by Harriet Chalmers Adams

THE ARAB HORSE IS SWIFT, STRONG, AND INTELLIGENT

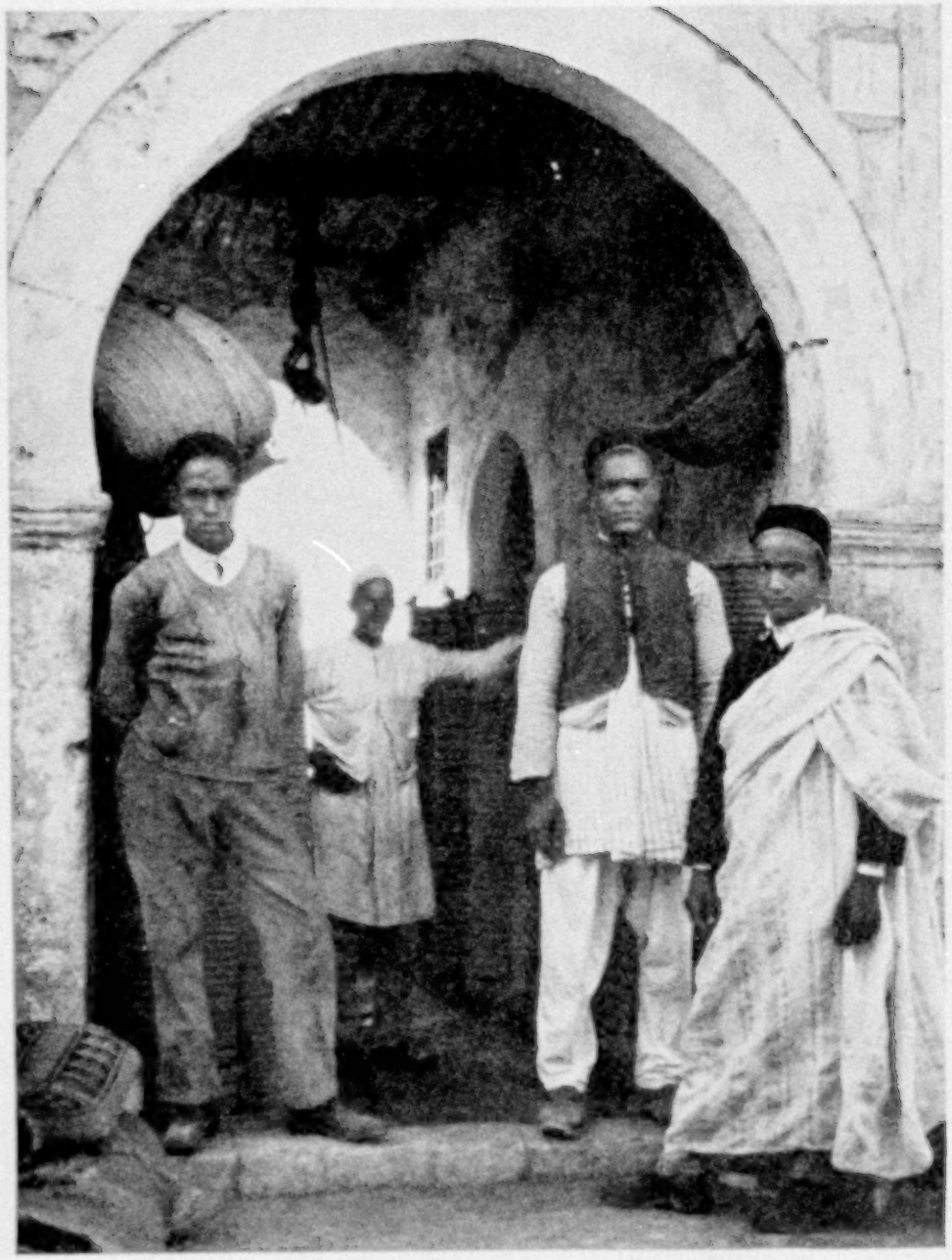
The bearing and attire of the Arab rider suggest that he is a person of importance.



Photograph by Riccardo Saver

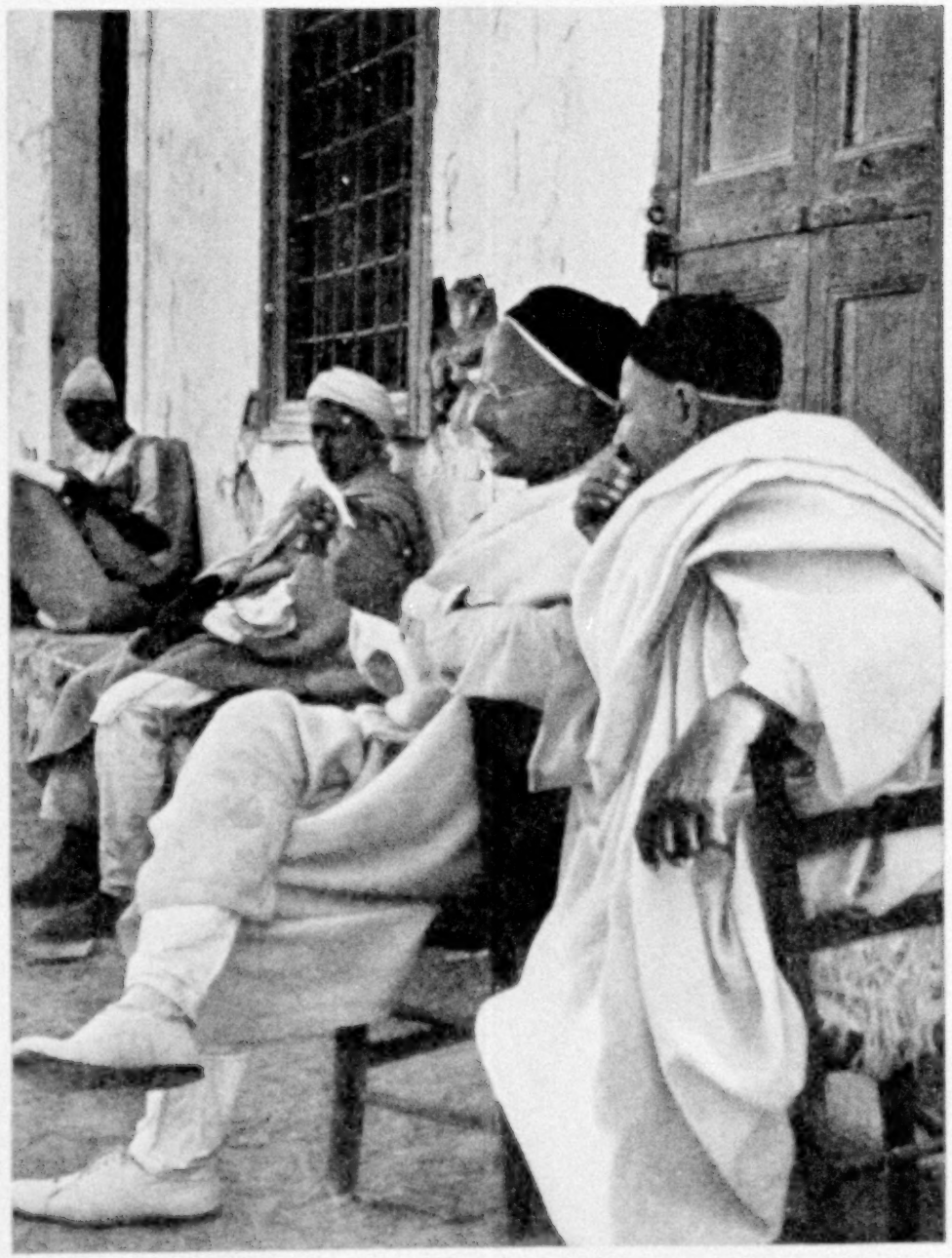
A NORTH AFRICAN APPROACH TO MATRIMONY

In a Cirenaican wedding procession the bride is carefully concealed within a tentlike contrivance placed atop a camel.



HOUSEBOYS VISIT MARKET AND BAZAAR FOR THEIR MASTERS

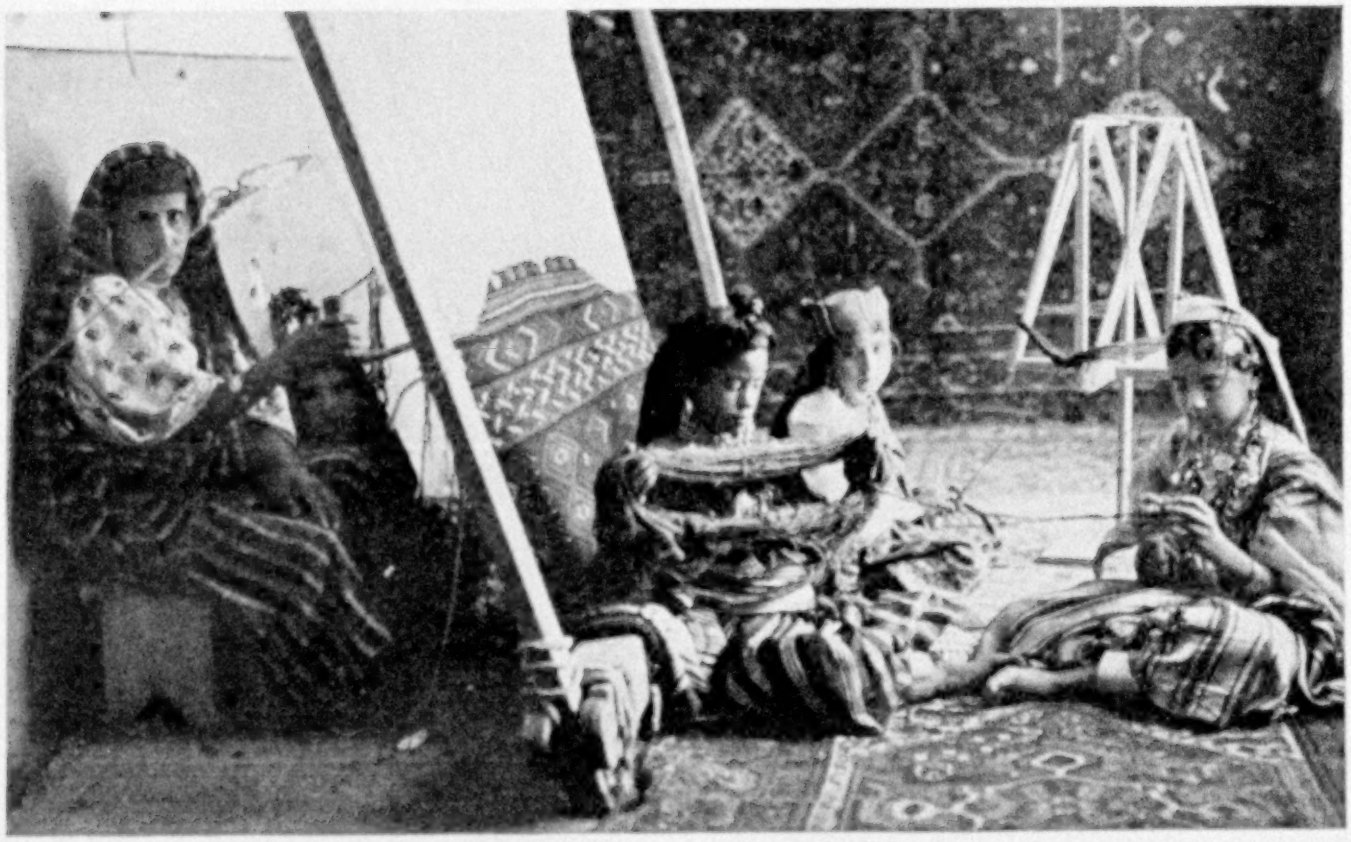
The European residents of Cirenaica seldom do their own household buying. Native servants not only can relieve them of that burden, but shop to much greater advantage.



ARAB SOCIAL LIFE CENTERS ABOUT THE SIDEWALK CAFÉS

In Bengasi, townsmen and visitors from the countryside alike throng these open-air places of rest and refreshment. While sitting and talking the men consume quantities of strong, sweet, black coffee.

Photographs by Harriet Chalmers Adams



Photograph by Vittorio Dimani

CIRENAICAN RUG MAKERS AT WORK

The people of this part of North Africa weave little as compared with inhabitants of some of their neighbor countries, but what they do is well done. One of the most distinctive of their industries is the preparation and decoration of leather pillow tops.

about eight inches deep and about four feet eight and a half inches apart, corresponding with those to be seen at Pompeii and elsewhere within the Roman Empire.

The inhabitants of ancient Barca acquired fame as charioteers. Many of the lions used in the arenas of Rome were brought from the Libian hinterland.

There are two attractive postage stamps in modern Libia. One portrays Isis, goddess of the ancient Greeks of Cirenaica as well as of the Egyptians, with a desert oasis as a background; the other pictures a Roman galley off a Libian port.

A PROMISED LAND FOR THE ANCIENT GREEKS

From Barce east to the ruins of Old Cirene is a day's hard motor ride through a rough, hilly country. It is in this part of Cirenaica that the only forested region is to be found and the finest mountain scenery along the entire North African coast. Here, among cypress, juniper and ilex, in chasms where springs gush from the sides of terraced hills and oleanders and myrtles bloom, we come to understand why ancient Greek colonists thought this their Promised Land. I was told that in the springtime an orange carpet of marigolds covers the meadows, while wild roses, honeysuckle, and convolvulus run riot on the hills.

The story of Cirene begins in 631 B. C., when trouble, long brewing on the island of Thira (now called Santorin), in the Ægean Sea, drove a leader, Aristoteles, to journey to the Delphic Oracle for advice.

"Take your loyal followers and sail south," said the oracle, "and found a city in Africa."

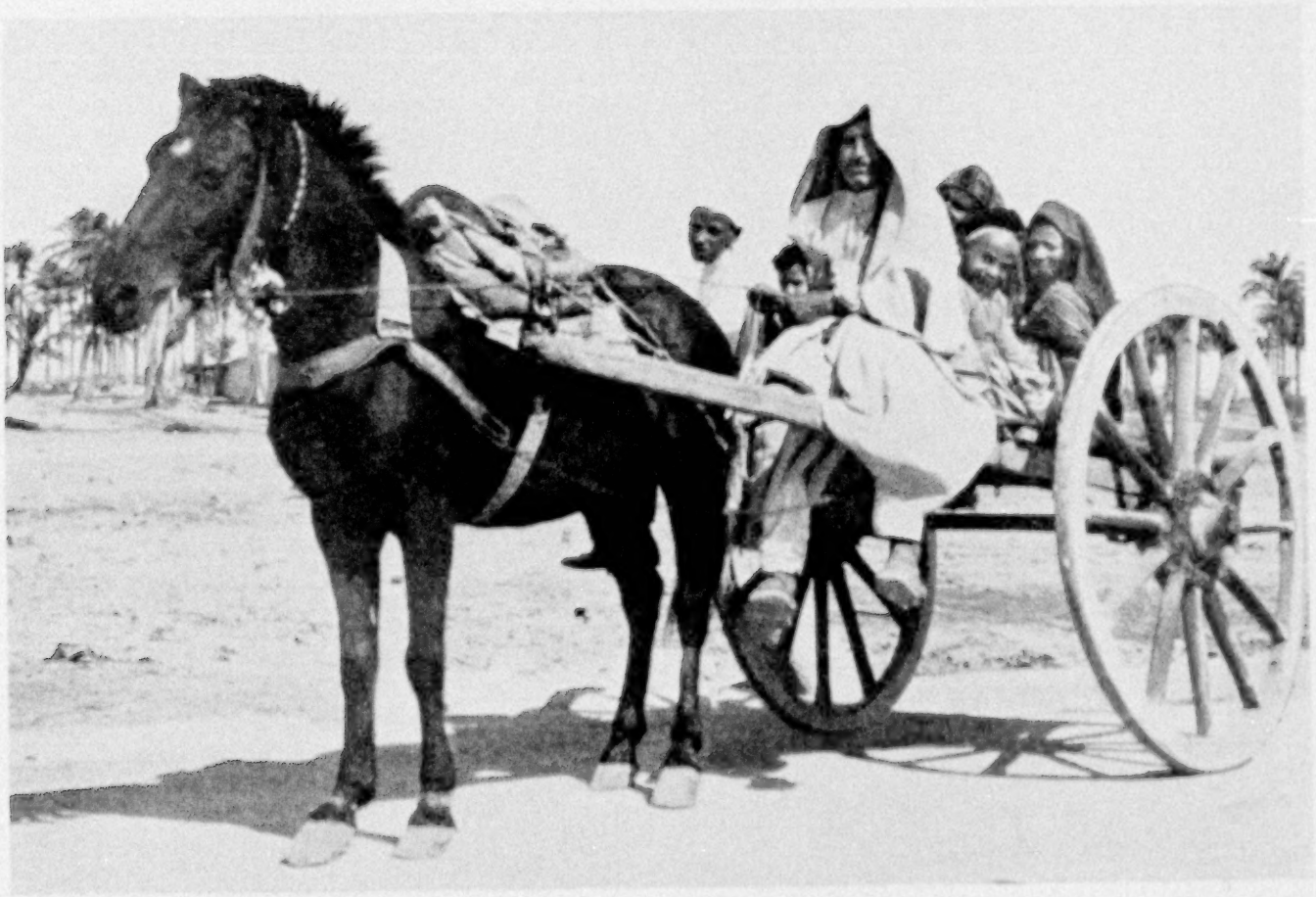
Aristoteles made port on the island of Crete in search of a guide. The Cretans were acquainted with the mainland to the south, and one of their pilots led the two 50-oar galleys of the voyagers to the shores of Libia, west of the power of Egypt, east of the power of Carthage. Here, on an island in the Gulf of Bomba, Aristoteles founded his first colony.

Making friends with the Libian inhabitants, he moved to the mainland and finally up to the heights of a terraced plateau,

Photograph by Vittorio Dimani

A COUNTRY SCHOOL IN CIRENAICA

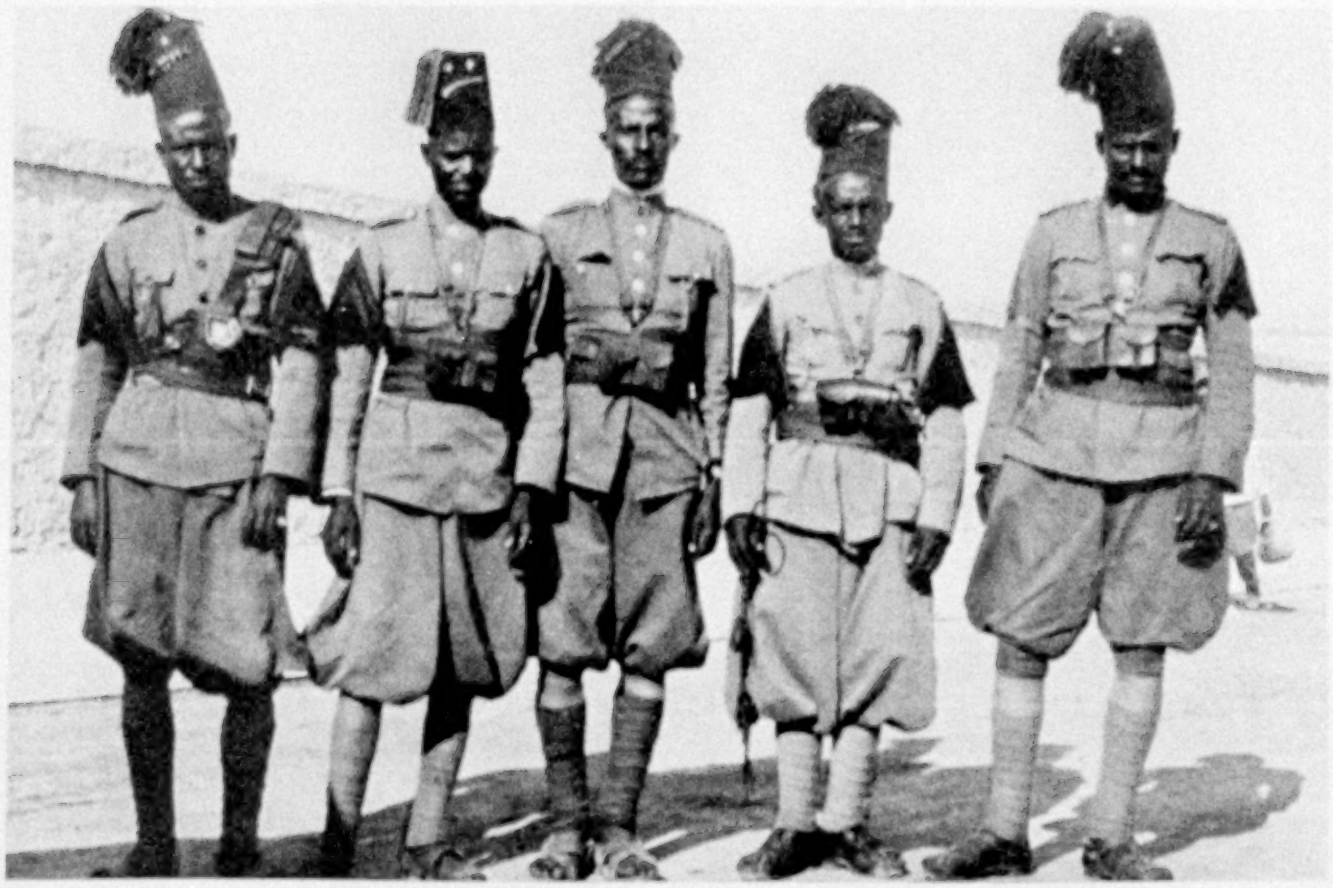
The principal textbook of these Arab boys is the Koran and they all recite at once.



Photograph by Harriet Chalmers Adams

BRINGING THE FAMILY TO TOWN FOR A FROLIC

The horse and two-wheeler sometimes replace the camel or burro as a desert farmer's means of getting family and crops to town. When they reach the city, father will drink much black coffee and play a game somewhat like backgammon. The women and children will sit about the market place, talking and feasting their eyes.



Photograph by Harriet Chalmers Adams

ERITREANS MAKE FINE COLONIAL SOLDIERS

The colony on the African Red Sea coast where these troops are recruited has been under Italian jurisdiction for nearly half a century, and its sons have been organized into a well-disciplined body. They are particularly useful for service in Cirenaica.

about ten miles back from the sea, where a stream flowed from a spring gushing from the rock of the hillside. This spring became known as the Fountain of Apollo, and the town which grew around it was called Cirene, after the nymph of the glade.

Aristoteles became king and took the title of "Battus," which may have been the Libian word for ruler. Lofty walls were built about the city he founded. The colonists took Libian women for wives and a Greco-Libian culture evolved, which made itself felt throughout the civilized world of that day.

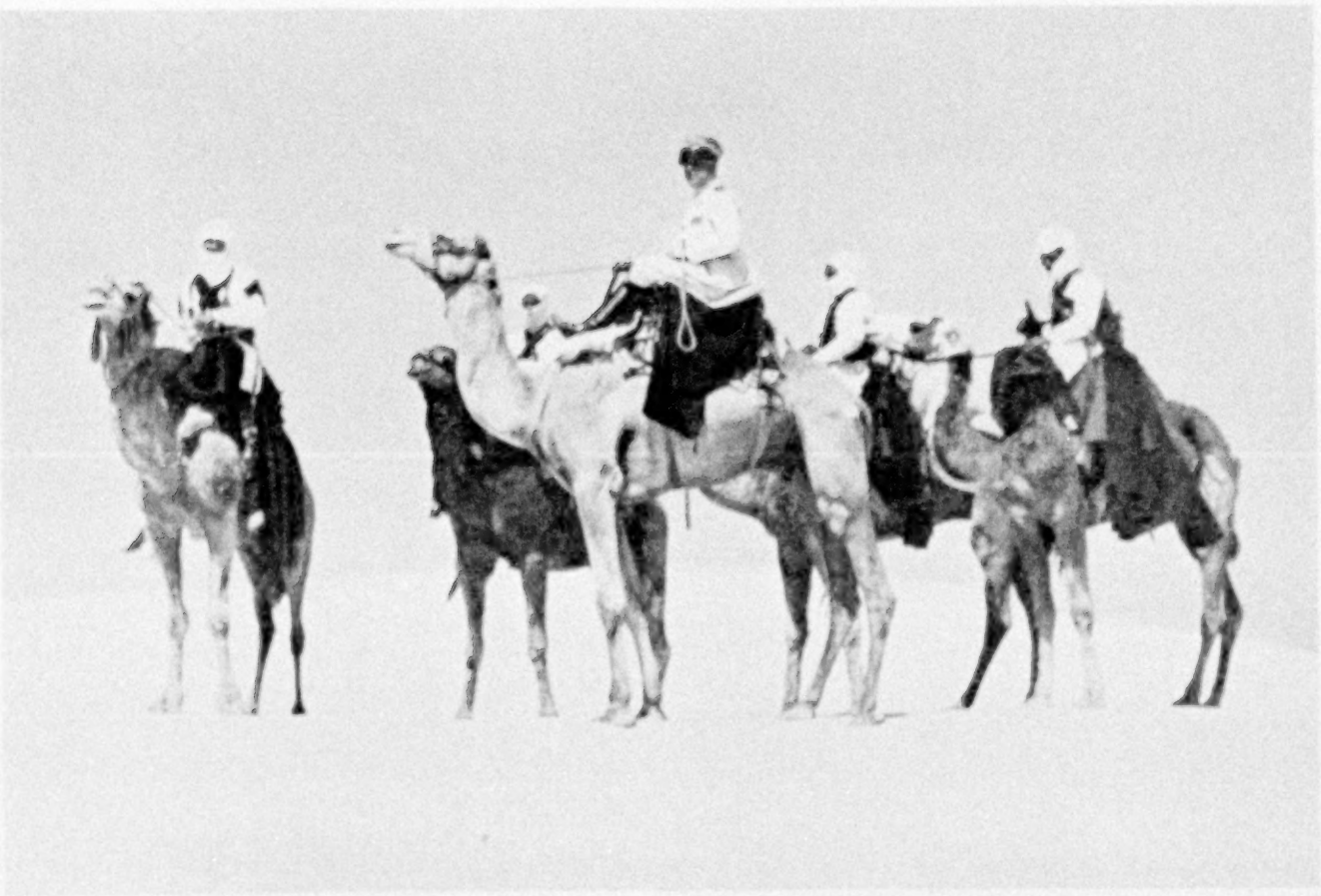
THE HOME OF THAT MIRACULOUS DRUG OF THE ANCIENTS, SILPHIUM

Trade was developed with the vast African hinterland between the known trade routes to Egypt and to Carthage.

A local source of wealth lay in the medicinal plants native to the plateau on which Cirene stood. Chief among these was the silphium, found in no other land. It became so valuable that the coins minted in Cirene bore a design of the king watching men weigh this precious plant. Never in history has there been a drug of such miraculous renown. It was said to cure every ailment, from croup to the wounds made by the merciless whippings of that day. It was of special value as an antidote for the sting of poisonous reptiles and the bite of mad dogs, and was highly prized as a condiment as well as a drug. Root, stem, and fruit were utilized.

Ships from every land now came into the port of Apollonia, from which a splendid highway led up to Cirene. As the fame of silphium grew, its price soared. It held its prestige even down to Roman days, when it was still worth its weight in silver. To free themselves of the enormous tax placed on it by the Romans, the natives living in the neighborhood of Cirene destroyed the plants. In time silphium became extinct, although a plant similar to it still grows in the region. The fruit of this plant is poisonous to camel and sheep, which are muzzled to prevent their eating it.

Last year a scientist in Cirenaica told



Photograph by Vittorio Dimani

A DETACHMENT OF MEHARISTS PAUSES ON THE DESERT

The Camel Corps plays an important part in policing the Cirenaican hinterland. Its mounts are speedy, beautiful, and generally docile creatures, quite unlike the notoriously ill-tempered and unkempt camels which are used as burden bearers.

me that an Italian doctor in Derna believes he has at last discovered, in a valley back from the coast, the original plant once so famous.

THE "FATHER OF GEOGRAPHY" WAS BORN IN CIRENE

Cirene became not only one of the most flourishing of Greek colonies, but the seat of a great school of medicine and of philosophy. Physicians, poets, and writers, noted in the ancient world, were born here, among them Eratosthenes, father of geography. From Cirene came many of the victors in the Olympic games.

The first blow fell when a prince of the royal line led followers to the west to found the rival city of Barca. A republican form of government followed the royal house of Battus, but Cirene lived on and flourished under the Egyptians and the Romans, who remodeled its temples and palaces. Under the Romans, Cirenaica may have had nearly three times as many inhabitants as it has to-day.

History relates many massacres of the Jewish people. Here the tables were turned. Israelite colonists, greatly increasing in numbers, revolted during the reign of the Emperor Trajan and massacred thousands of Romans and Libians. From this time on Cirene rapidly declined, to be superseded by the ports of Apollonia and Berenice. When the Arabs arrived, in the seventh century A. D., it was little more than a ruin.

Unlike many other famous sites, one city has not here been built upon another, but Nature, through the years, has covered with vegetation and earth "the glory that was Greece."

During the Turkish rule several foreign archeological expeditions were at work and treasures of sculptured art were carried to England, France, Italy, and Germany. From October, 1910, until May, 1911, an American expedition, under the auspices of the Archeological Institute of America, excavated at Cirene. Although permission for the work had been granted by the Turkish authorities, the natives were most unfriendly, suspecting that

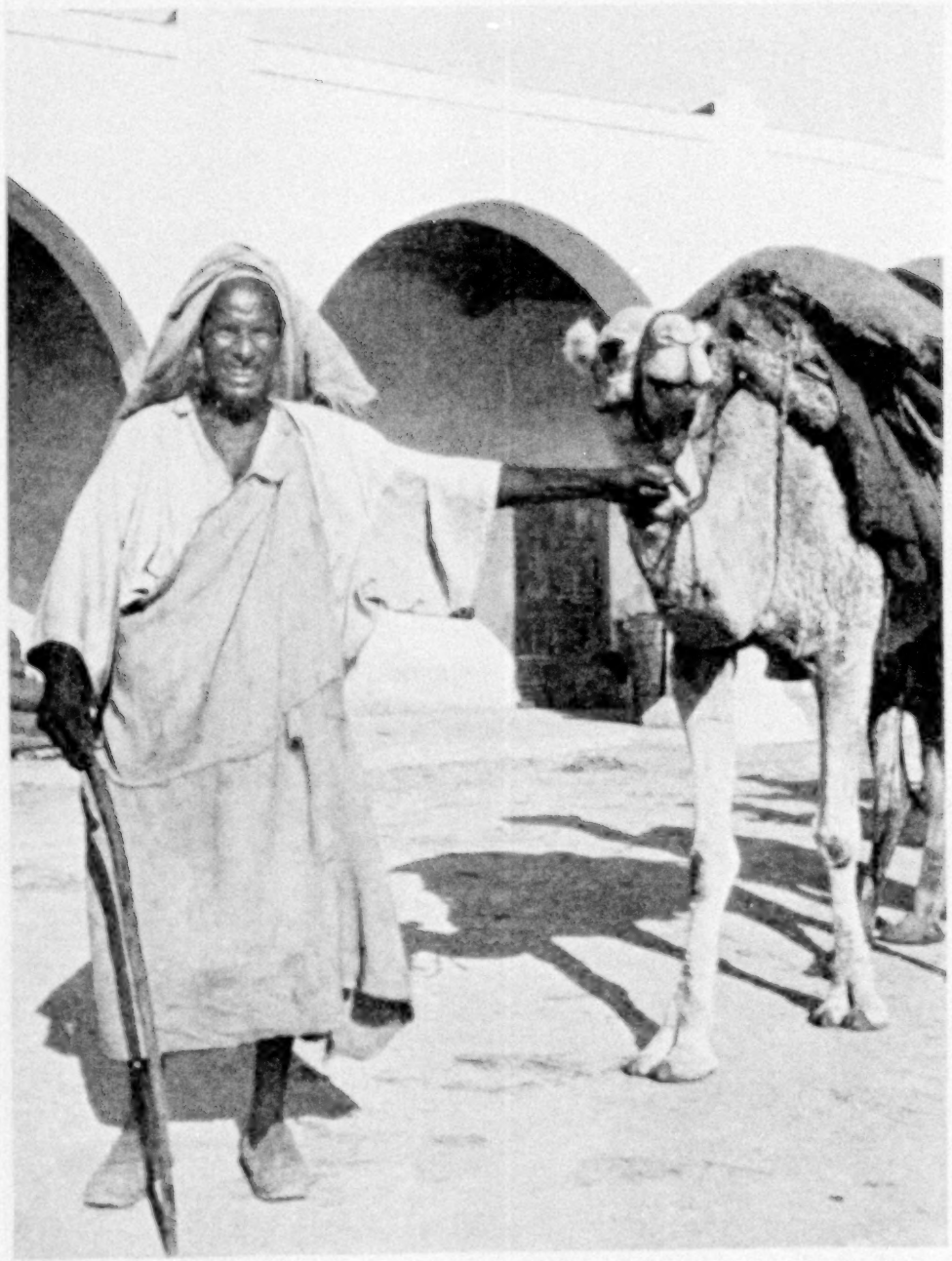
MODERN REPRESENTATIVES OF ROME'S CONQUERING LEGIONS PENETRATE THE LIBIAN DESERT

Photographs by Vittorio Dimani

NATIVE SOLDIERS OF THE COLONIAL ARMY OF CIRENAICA OBSERVE THE HOUR OF PRAYER

THE PATIENT ASS CAN BEAR PRODIGIOUS BURDENS

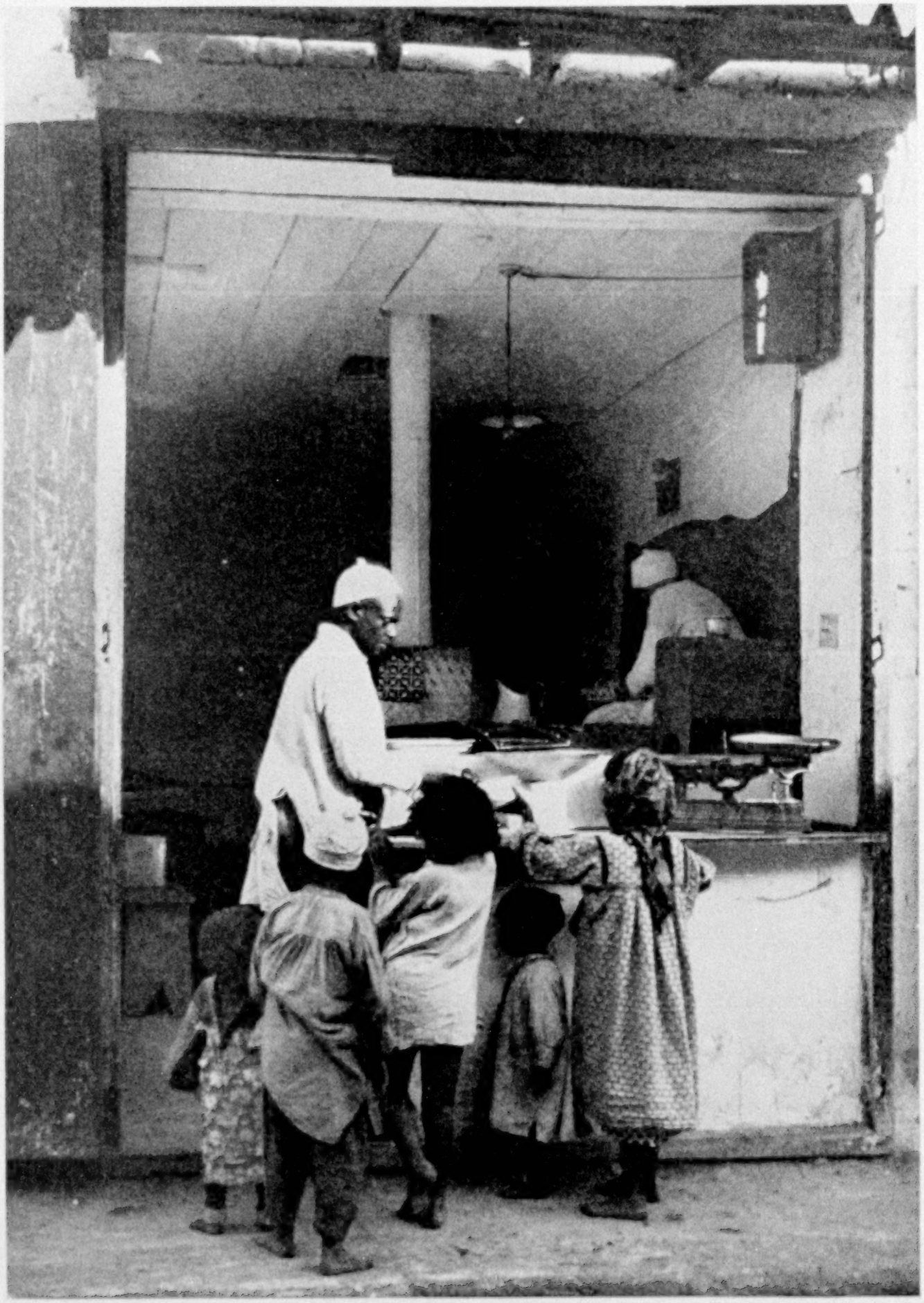
The burro is native to North Africa, and was domesticated by the Berbers long before camels were seen west of Egypt. They are strong and hardy, and often carry seemingly impossible loads.



CAMELS DO A LARGE SHARE OF LIBIA'S WORK

The animals start preparation for their life of toil when about four years old. When full grown, they readily carry from 300 to 500 pounds. A Bedouin at a caravansary on the outskirts of Bengasi.

Photographs by Harriet Chalmers Adams



Photograph by Harriet Chalmers Adams

WHEN BUSINESS IS BRISK IN CIRENAICA'S CAPITAL

Both the native town and the European section of the city are thriving under Italy's vigorous rule. Children here differ no whit from those of other lands in their eagerness to exchange their coppers for sweets, and shopkeepers are just as willing to oblige.

Photograph by Vittorio Dimani

FORTY-TWO CUPOLAS ADORN THIS MOSQUE AT DERNA

For the most part, Cirenaica's mosques are not pretentious places. Derna is the garden spot of the North African coast, and many varieties of tropical fruits and flowers grow there.

sulphur mines or petroleum wells were the real treasures sought. This hostility led, in March, 1911, to the murder of an eminent American archeologist. In spite of this tragedy and innumerable difficulties encountered, the Americans would have returned another season had not the Italian military expedition and subsequent conquest of Libia brought an end to all foreign archeological work. Italian archeologists alone are now permitted to excavate.

RAIN EXCAVATED THE VENUS OF CIRENE

The vast ruins of Cirene are still mostly underground. The city's walls, four miles in circumference, can be traced. Outside these walls, rising tier on tier up the hillsides, are the cemeteries, surpassing in extent, variety, and state of preservation those in any classic land.

For centuries these beautiful painted rock tombs, with their pillared façades, have been given over to nomads. The tombs have been rifled by robbers, who have carried away jewels and ornaments dear to native women and weapons of use to the men, leaving, by happy chance, statues, bronzes, and terra cotta.

In Cirene, as well as in Bengasi, there is a museum where recovered statues and tablets are housed. The story of the finding of the glorious Venus of Cirene is a romantic one (see page 709).

"In December, 1913, there had been three nights of a storm," an archeologist told me. "Much soil had been washed away from the hillsides. In the morning, when the skies cleared, we found exposed a part of the ancient baths heretofore covered, and from Mother Earth this time, instead of from the sea, rose the fair Aphrodite. Her beautiful body was intact, but her head, alas, was missing."

It is inspiring to consider what the future holds for Cirene. Some day, when much needed work of a more practical nature for the new colony has been accomplished and the Italian Government goes at the excavating in earnest, a dream city of stone and marble may emerge. Men of a future day may tread paved

streets in use 2,500 years ago, and wander through palace, theater, and stadium to columned temples where Greeks, Romans, and Byzantines worshiped in turn.

There is now a village on the site of the old city. The Sicilian woman who keeps the inn told me that the climate all year round is very pleasant, save when hailstones of unusual size drive down, or when an occasional hot wind blows from the Sahara.

THE STARS AND STRIPES ONCE WAVED OVER DERNA

Eastward from Cirene lies the port of Derna, which the Italians call "The Pearl of Libia." Here there is more water for irrigation than in any other part of the colony. Semitropical and tropical flowers and fruits grow in the gardens, and the surrounding valleys are most productive. Beautiful butterflies, including the swallow-tailed variety, are to be seen in this part of the country.

Derna is linked with American history, for during the war between the United States and Tripoli, in 1805, the Stars and Stripes waved for a short period over its battlements.

During civil strife between a native ruler of Tripoli and his brother, an American ex-consul, Gen. William Eaton, sided with the brother and led an army of 400 men, with 107 camels, westward along the coast of Egypt and Cirenaica, a distance of 600 miles. The United States brig *Argus* met the land force at the port of Bomba. Pushing on, Eaton's force captured the battery at Derna and planted the American flag on the heights.

THE LAST OF THE PTOLEMIES GAVE CIRENAICA TO ROME

As we journey eastward, the Cirenaican coast ends at the Gulf of Sollum, but dramatic events in the country's history have hurdled the frontier. Northward from the sea across the desert, paralleling what is now the Egyptian-Cirenaican frontier, marched Alexander the Great, after founding the city of Alexandria, soon to become the center of Greek culture and of the commerce of the world. He was bound for the oasis of Siwa to consult the Oracle of Jupiter Ammon, hoping to be confirmed in the belief that he, Alexander, was of divine origin. As he left the Mediterranean shore at Matrûh, on his long desert march, the Macedonian conqueror of Egypt was met by a delegation from Cirene bearing gifts of chariots and war horses.

At Siwa the oracle evidently confirmed Alexander's belief that he was indeed the son of the god Zeus and so a legitimate Pharaoh. In 331 B. C. he started forth to conquer Asia. After his death, Cirenaica was ruled by the Egyptian Ptolemies.

It was the last of the Ptolemies who, in 96 B. C., bequeathed Cirenaica to the Roman Senate. Only last summer a remarkable tablet was unearthed in Cirene. On it is inscribed the very decree which gave Cirenaica to Rome.

AN OLD-NEW LAND TO BLOOM AGAIN

There is in Bengasi a slightly built man of middle age with far-seeing eyes, an Italian army engineer, the colony's foremost geographer. He knows and loves his Cirenaica. The day before I left the country I sat beside him with a new map of his own making spread out before us. As he talked his pencil moved rapidly across the sheet, and the black dots and lines took on color and came to life.

I heard the surf beating against the Libian shore, smelled the juniper and rosemary of the hills where Old Cirene lies, saw men at work at the olive presses, rode through flocks and herds across the steppe to where the "pad, pad" of camels' feet breaks the silence of the ocean of sand.

The engineer's pencil, touching boundaries definite and indefinite, came back lovingly to the north, and here he drew a wide crescent on his map of Cirenaica.

"We have," he said, "no great illusions about the gaunt steppe or the interminable desert; but here, within the crescent I have drawn, on coastal plain and fertile plateau, where climate and soil resemble those of southern Italy and Sicily, and where we are sure of sufficient water for irrigation, we shall continue to build highways and railways and settle our colonists. Here, where the Greeks of old developed the Garden of North Africa, which our ancestors, the Romans, later called their granary, we shall again make this old-new land bloom."

THE LURE OF LIMA, CITY OF THE KINGS

By William Joseph Showalter

Author of "Cuba—The Sugar Mill of the Antilles," "Twin Stars of Chile," "Virginia—A Commonwealth That Has Come Back," etc., in the National Geographic Magazine

IT WAS a dull midwinter morning that brought me into the busy harbor of Callao, the principal port of Peru. As our ship came to anchor and the port formalities got under way, Lima loomed upon the horizon—Lima, founded as the City of the Kings, developed into the viceregal capital of a continent, and latterly transformed into a modern Latin-American metropolis.

A pall of dense clouds hung low over the Rimac Valley, that floor-level and fertile plain which the Peruvian capital shares with imposing ruins of lost civilizations, with beautiful haciendas that form islands of green surrounded by seas of sand, and with occasional stumps of ancient mountains which the erosion of the ages has not yet conquered.

But the clouds were still high enough for the spires and towers of the city to rise out of the distance, with an air of welcome to the traveler.

A fine old *fletero*—he confessed to 82 years and clearly was a full-blooded descendant of the ancient people who dwelt there before the Old World even suspected the existence of a Western Hemisphere—took me ashore in his launch.

Tall and erect despite his years, with his face eroded by decades of hardship, and with his gnarled but sinewy hands still supple, he seemed a lone survivor of the heroic age of his race, when men were giants upon whose shoulders fourscore years rested lightly.

IN THE FOOTSTEPS OF PIZARRO

I had come to see the first-founded capital of South America in the process of modernization, and to catch something of the romance and lure of its nearly four centuries of dramatic history; and I hoped to gather inspiration for the undertaking by following further the footsteps of Francisco Pizarro and Diego de Almagro, those two baseborn lads of Old Spain whose path I had picked up at Panama and followed to Túmbez—a path that led to the glory of the conquest of Peru and the grave of ignominious death at the hands of the executioner and the assassin.

But in going from Callao to the capital over the splendid, eight-mile concrete boulevard, where late-model automobiles and heavy-duty trucks have taken the place of antiquated, high-wheeled carriages and snail-pacing bullock carts, even that romantic past for the moment became obscured by another looming historical horizon.

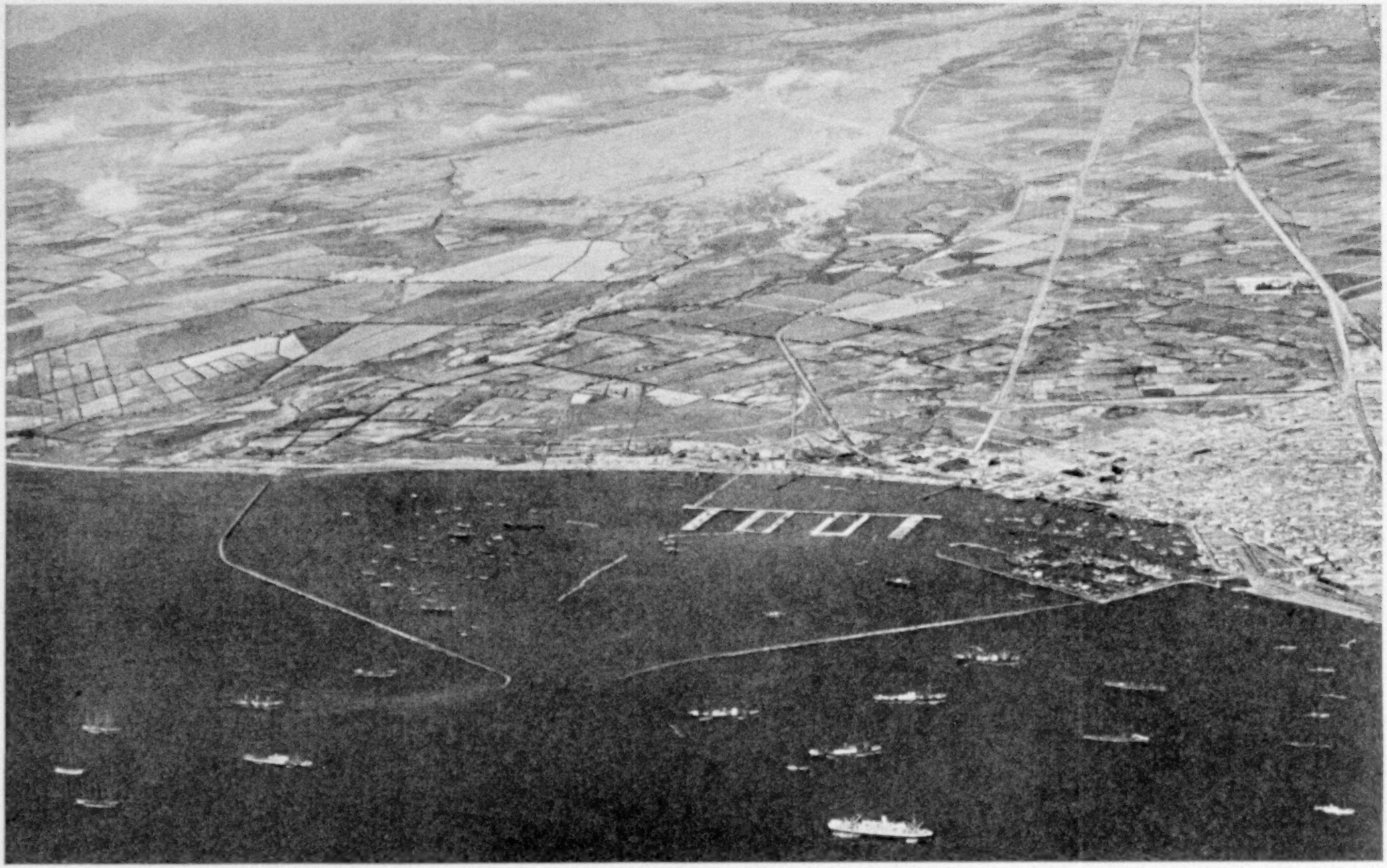
For, about halfway to Lima, a vast ridge rises from the valley floor, on which the iron heel of the Conqueror could leave no impress. The highway goes neither over nor around it, but cuts boldly through. If your eyes are sharp, you will discover that it is not a hill at all, but a huge man-made mound, perhaps the greatest pile of adobe brick in the world.

A VAST PROJECT OF THE PAST

When the chief engineer of the biggest construction company in South America was asked what it would cost to reproduce that structure to-day, even with the cheap labor—compared to ours—of Peru, he calculated its cubical contents and found that there is not now a single engineering project under way, from the Rio Grande to the Strait of Magellan, that would call for such an expenditure as the replacement of this adobe hill would involve.

That huge structure—several city blocks long, half as wide, and perhaps 50 feet high—speaks of times so remote that the doings of Pizarro and Almagro seem but the events of yesterday; proclaims a race which was forgotten before they were born. It carries us back to a time of which only irresponsible Legend dares speak with assurance; to a time before which more trustworthy Tradition stands uncertain; to a time that was already far too remote for memory when History wrote her first halting passages.

Beside the thoroughly modern boulevard which runs through that ancient edifice stands a pedestal surmounted by a wrecked automobile, with a legend of warning; and a little farther on, atop an adobe fence post, sits the grinning skull of some poor Yorick of the forgotten race which built that great ruin.



Photograph courtesy Lieut. Comdr. R. Guzmán Marquina

THE EXTENT OF CALLAO'S NEW HARBOR WORKS CAN BEST BE APPRECIATED FROM THE AIR

In the foreground are the breakwaters that keep out the Pacific rollers. At the right is the city. The highway leaving the city itself is the boulevard to Lima; the second and straighter line is the new trucking highway between the port and the capital.

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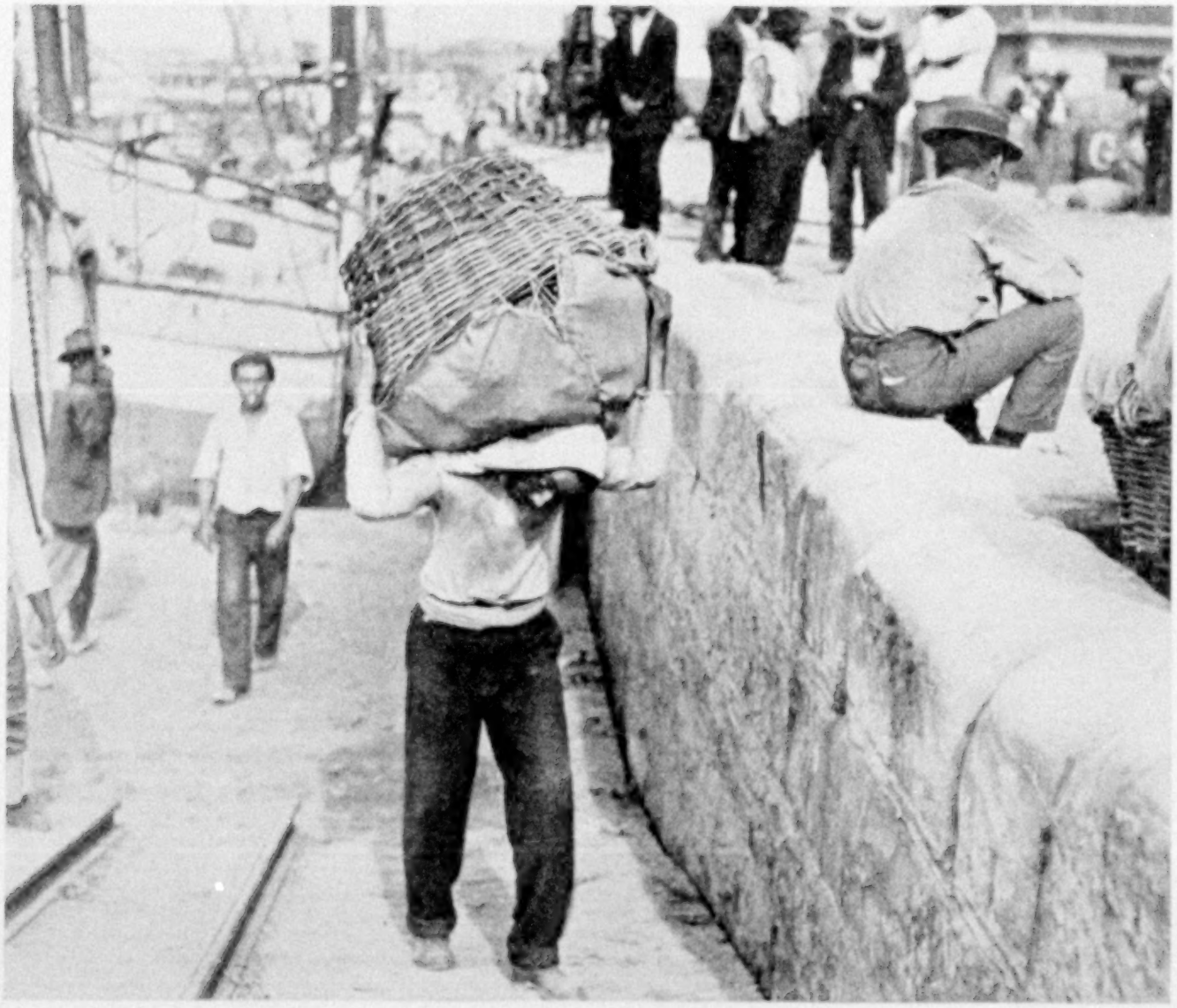
A LOFTY MEMORIAL TO COL. FRANCISCO BOLOGNESI, ONE OF THE HEROES OF THE CHILEAN WAR

At the Battle of Arica, 50 years ago, this gallant Peruvian was called upon to surrender. "Not until I have used my last cartridge!" he exclaimed, and presently fell under a withering fusillade of bullets. The boulevard in the background is the Paseo Colón (see illustration, page 750).



Photograph by Charles M. Little

FRUIT FROM A COASTING STEAMER COMING ASHORE AT CALLAO

From such ports as Pisco, Paita, and Pacasmayo schooners bring oranges, papayas, and other fruits produced on the fertile irrigated lands of the arid coastal plain. In Peru the avocado, or alligator pear, becomes the *palta*, and many other names change.

When one comes at last to Lima the events of the Conquest, the founding of the City of the Kings, and the passing of the Pizarros are recalled. It was only 22 years from the time that Pizarro and Almagro entered upon their celebrated pact at Panama until the head of the last leader of that dauntless band dangled in a cage on a gibbet in the fine old Plaza de Armas in Lima; but they were years amazingly crowded with dramatic events that challenge and fire imagination.

DRAMATIC EPISODES RESTAGED IN THE PLAZA DE ARMAS

Perhaps if we wander down to the Plaza de Armas, around which centered so much of the tragedy as well as so much of the romance of those epochal years, and sit there awhile watching the throngs that occupy its hundreds of park benches much as they have for nearly four centuries, the busy metropolis can be induced to pause for a moment in the hustle and bustle of its activity, and provide us, movie-fashion, a cut-back that will recreate some of the strange and startling scenes that figured in its founding, led to its rise to viceregal glory, and culminated in its present program of modernization.

On one side of the Plaza stands the stern old National Palace, its lines as uncompromising and as firm as were the deeds and purposes of the man of blood and iron who planned it.

As one faces the Palace, the Cathedral and the Archbishop's residence occupy the right side of the Plaza and the Arcade of the Scribes the left.

What stories of men of action in the

Photograph by H. E. Vroman

A WEST-COAST WAY OF LANDING PASSENGERS

At Mollendo and many other Peruvian ports there are neither harbors nor alongside docks. Ships anchor in the open roadstead and receive and discharge passengers and cargo from and into launches and lighters. Sometimes a ship waits all day for favorable seas that fail to materialize, and then sails on, carrying to the next port the passengers who wanted to land.

joys of triumph and the sorrows of defeat, in the exultation of pomp and the dejections of disgrace, center there! Faith and treachery, honor and duplicity, courage and cowardice, applause and hatred—all the contrasting characteristics of human nature, all the quirks and turns of life's fortunes, run through the theme of Lima's life as the woof runs through the warp of a tapestry and give it both color and pattern.

FRANCISCO PIZARRO COMES LADEN WITH TREASURE

Here comes Francisco Pizarro, he who had been a foundling upon the steps of a church in the Spanish city of Trujillo, then a humble hog herder in Estremadura, and later an illiterate adventurer at Panama; now he is the grim leader who deflected the course of history at Gallo, the triumphant conqueror who mastered the Inca warrior host at Cajamarca, the modern Midas who made his ancient prototype turn over in an envious grave.

And he is laden with the blood-stained treasure which Atahualpa paid for the freedom never received.

Gold! What uncounted gold he brings down to finance the building of his new capital! Had not the Inca monarch so desperately desired his liberty that he undertook to fill a room 22 by 17 feet with it, as high as he could reach? And had not Pizarro, smiling grimly, chalked his tiptoe reach at nine feet?

And silver! Yes, the Inca had been so eager to meet the highest dream of Pi-

zarro's avarice that he offered two roomfuls of the white metal for good measure.

Pizarro, indeed, had exacted the greatest king's ransom in history. It was so much that even the humblest cavalier received $105,000 (in terms of American money) for his share in the exploits of Cajamarca, so time-dimmed records tell us.

Cuzco then, even as now, was no place for a capital of a country that needed contact with the sea. It is far up in the bleak and frigid *puna* region, with an altitude of more than two miles and with the mightiest ramparts of the Andes isolating it from the ocean (see Color Plate II).

"I WILL BUILD ME A GREAT CITY"

"This is too remote a city and too unattractive a place for the residence of so great a conqueror and so opulent a ruler," doubtless mused Pizarro. "I will go down out of the mountains and build me a city on a plain, by a river, looking out upon the sea, that will be a worthy seat for so mighty a marquis and so puissant a conqueror."

So, he came down out of the mountains, through the gorges and along the precipices of the river Lurín. He reached Pachacámac, marked by ruins of civilizations even then long since lost and occupied by temples of a newer civilization that by him was doomed to pass.

But no, the valley of the Lurín was too narrow to serve as the site of the magnificent capital he planned to create.

A few miles up the coast, however, another river descended from the nearly four-mile-high slopes of the Andes and came down to the sea—a broader river with a wider plain and a better port.

The Indians had led the life-giving waters of the melting Andean snows through many a fluvial artery and countless absorbent veins which they laid down over the land, and a one-time desert had become another Canaan.

THE ONE-TIME SWINEHERD BECOMES A A MASTER CITY PLANNER

Here, then, Pizarro comes to build his capital. The one-time swineherd had lived to be the first great city planner of the antipodes. Nor have four centuries sufficed to reveal a better site than he selected for the capital of Peru.

San Lorenzo thrusts its island heights boldly out of the sea, shutting out the long Pacific rollers and making a good harbor hard by, on a coast peculiarly lacking in safe havens for ships. San Cristóbal as boldly rears its great head out of the plain and makes a magnificent sentinel for the city that nestles beneath its shadows. The alluvial valley round about drinks in the water of the Rimac and flows with the milk and honey of truck and market garden products.

Though midway between the Tropic of Capricorn and the Equator, the climate has few of the attributes of the Torrid Zone; for the cold brought up out of the Antarctic regions and delivered there by the great Humboldt Current tempers the heat of coastal Peru in the same way that the heat brought out of the Caribbean and Gulf of Mexico by the Gulf Stream tempers the cold breath of Great Britain and Ireland.

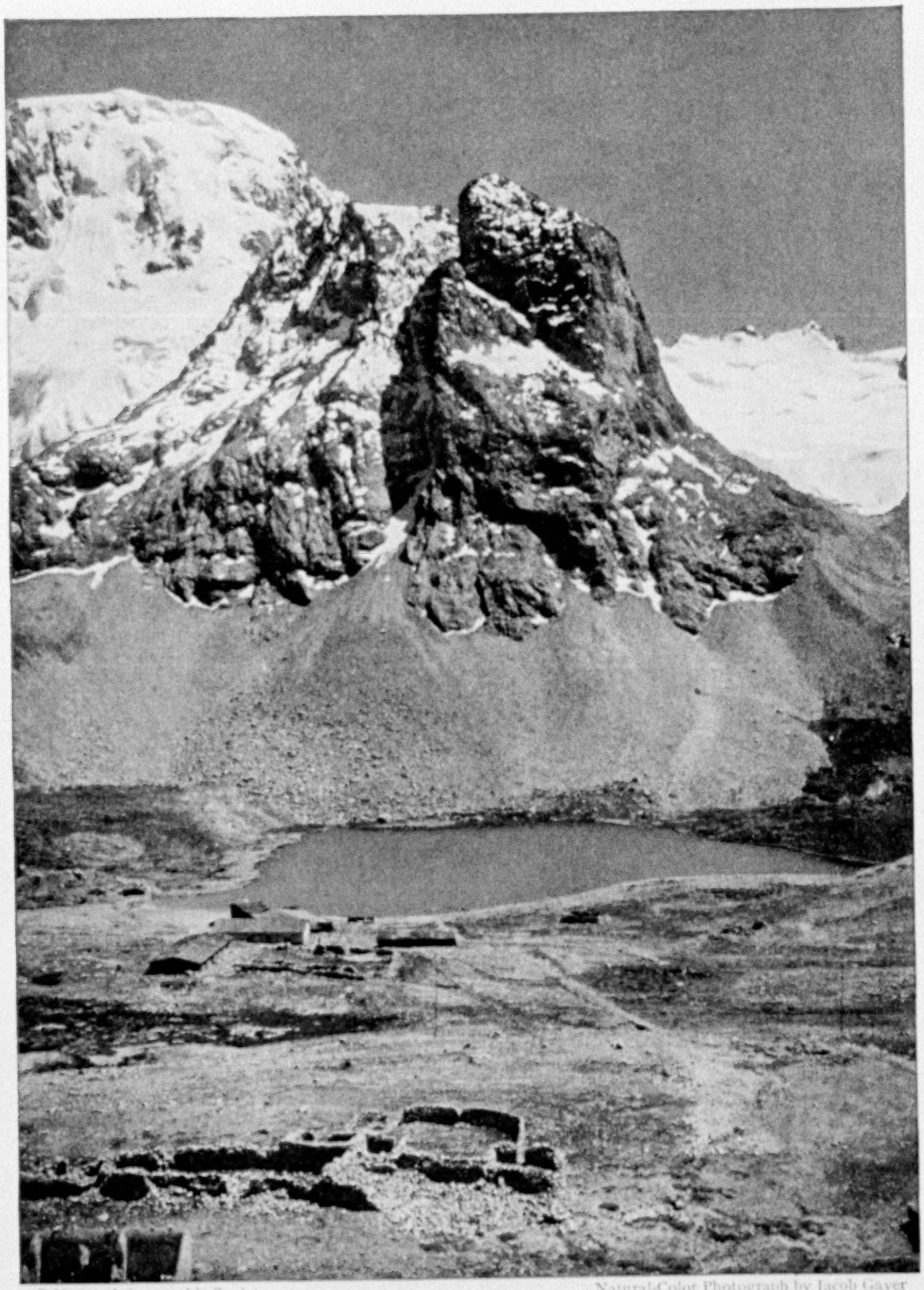
So the mighty curtain of the Cordilleras shuts out the hot, humid rains of the region beyond, while the mountain ramparts and the cold current join forces to form vaporous clouds that screen the city from a too-ardent sun.

LIMA BEGINS TO TAKE FORM

Epiphany Sunday in the year 1535 dawns, and amid the reverent rejoicings of that sacred day Pizarro announces the site and christens his capital-to-be *Ciudad de los Reyes,* City of the Kings, the reference being to the three Wise Men of the East, a suggestion that still finds perpetuation in the flag of Lima.

Pizarro, the one-time foundling, shows us that he can build a city as well as choose wisely its location. He begins his palace, selects a site for the Cathedral, lays out the Plaza de Armas, and indicates broad highways to the mountains and the sea alike as a military precaution.

His grizzled warriors lay aside powder and Toledo blade, helmet and breastplate, to take up hammer, saw, and trowel. The Conqueror literally pours his wealth into the embellishment of his young capital, his joy and his pride; and "with splendor of edifices and pomp of gardens" it marched forward toward completion, drenched with the sweat and blood of thousands of Indian captives.



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Natural-Color Photograph by Jacob Gayer

MOTHER EARTH MAKES A BLANKET FROM HER ROCKS

One sees at work in the comparatively recent-born Andes those forces by means of which the Earth clothes herself. The bank of talus at the cliff's base was weathered from its walls and ultimately will be washed away and become river-spread soil. The group of buildings near the lake shore is part of a copper-mining development on a branch of the Central Railway of Peru.

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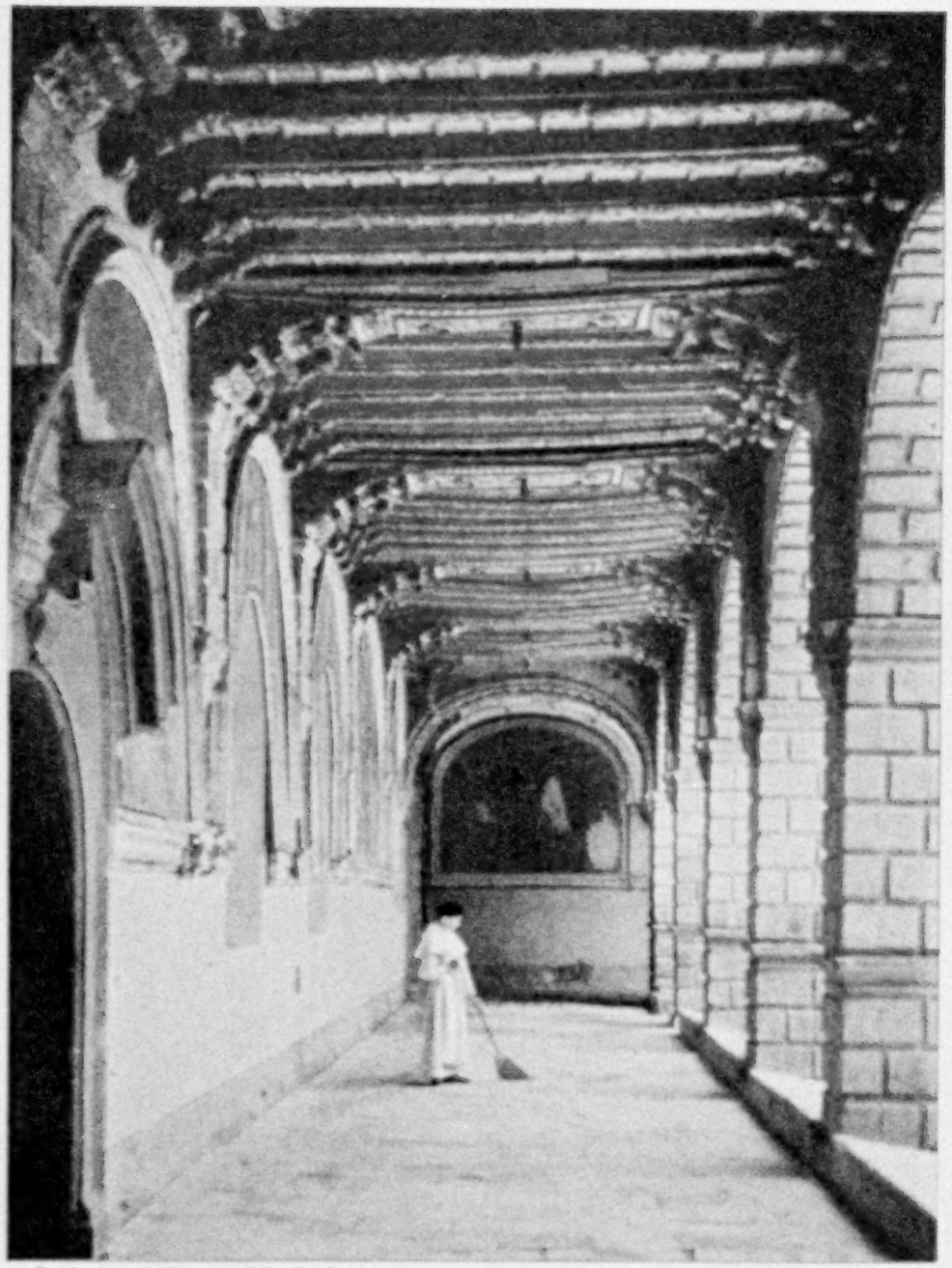
Natural-Color Photograph by Jacob Gayer

"HAIL, CUZCO, GREAT CITY, I SALUTE THEE!"

Thus Andean travelers greeted the capital as they approached its portals. Tradition tells us that the Sun God himself sent a celestial pair to locate it with a golden wedge which would sink from sight when the ground was reached where the deity would have his major shrine, built by earthly followers. In the days of the Incas' glory, Cuzco could vie in sanctity, grandeur, power, and even wealth, with the great cities of the ancient world.



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QUIET REIGNS OVER COURTS AND CLOISTERS

In a crypt within the monastery of La Merced in Cuzco (left), repose the ashes of Gonzalo Pizarro, brother of Francisco Pizarro and once hailed as "Liberator and Protector" of Peru, only to suffer later disgrace and execution. Santo Domingo (right) occupies the site of the old Inca Temple of the Sun.

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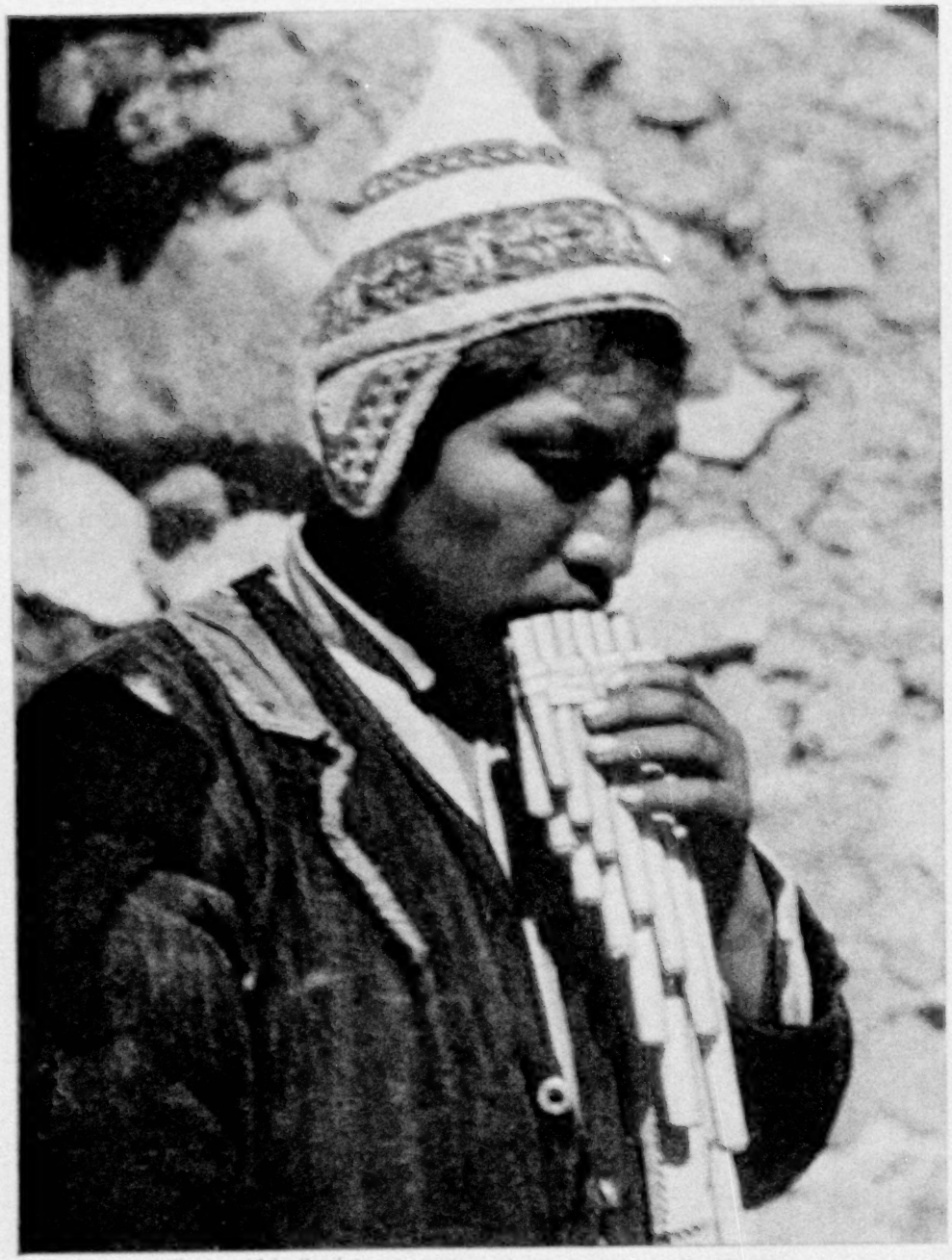
"MONTAÑA" DWELLERS WEAR MOSQUITO-PROOF ROBES

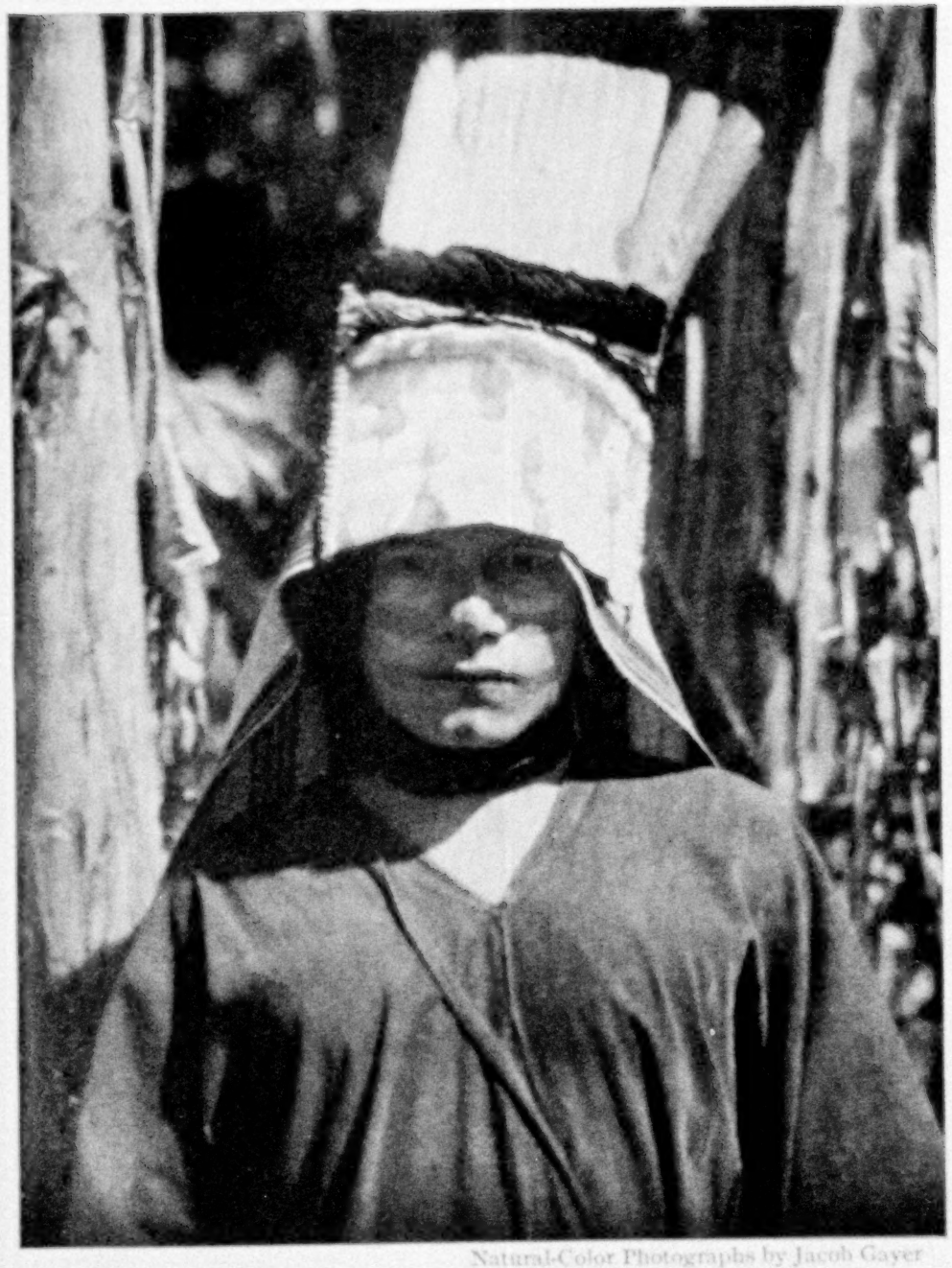
Voluminous homespun cotton "shrouds" serve to protect Campa Indians from the numerous insects of upper Amazonia's heavily wooded regions. The doorway is an entrance to a dwelling in which several families live.

Natural-Color Photographs by Jacob Gayer

PONCHO-CLAD QUICHUAS VIEW A MOVIE ANNOUNCEMENT

The sign advertises an afternoon showing of a comic picture, to which ladies will be admitted free. On ancient Inca masonry has been imposed an encircled question mark, modern Cuzco's symbol denoting a near-by fire hydrant.





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ENVIRONMENT HAS STAMPED ITS RECORD UPON THESE FACES

Nurtured in bare, bleak, inhospitable lands of hardship, the Quichua Indians can trot many miles with a load that the Campas, bred in the forested regions of eastern Peru, could barely lift. The Quichua musician at the left is evoking from his pipes of Pan sounds as lugubrious as his life is drab. The Campa tribesman (right) wears a ceremonial headgear.

CHILDREN OF THE GREAT FOREST

One seldom meets among the Indians of South America faces with such regular features as those of the Amuéixa, dwellers in the Peruvian jungles.

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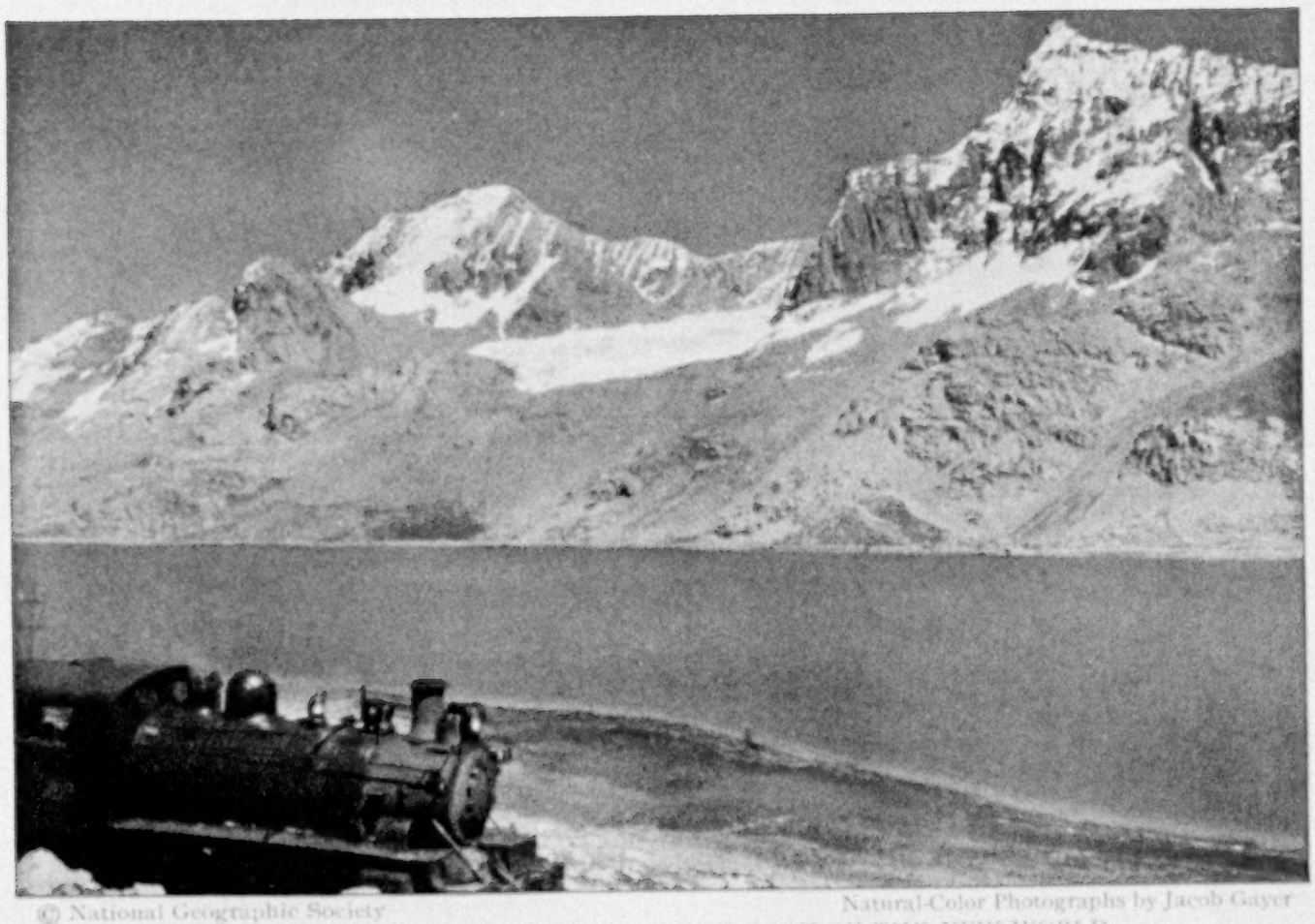
CAMPAS NEVER BOWED TO THE INCA YOKE

These Indians, who were unconquered by the ancient lords of the land, have adopted the white man's firearms, but they still find profit in making bows and arrows for sale to travelers.

RAILROADING THREE MILES ABOVE THE SEA

Some one facetiously has said that the Central Railway flirts with the moon and makes faces at the Milky Way.



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AN AMERICAN LOCOMOTIVE ON THE ROOF OF THE NEW WORLD

The Central Railway of Peru was begun by a Californian and completed by a Virginian. From Lima to the summit of the Andes it passes through 61 tunnels and runs over 41 bridges.

THE CURB MARKET AT PUNO

Bread and a species of red pepper constitute the "wares" of this merchant. Prices are low, buyers are few, and the margin of profit is so small that the problem of keeping body and soul together never ceases.

© National Geographic Society Natural-Color Photographs by Jacob Gayer

MARKET DAY IN HUANCAVO

Sheep and llamas are a godsend to the Andean highlanders, for their wool provides warm clothing for the bitter-cold climate. As one journeys through this wind-assailed, frost-ridden land, wonder grows into amazement that one of the greatest of aboriginal races was cradled here.

But he was not to enjoy his fair city long; for the adherents of his oath-bound coadjutor, Almagro, whom he had permitted to be executed without raising the only hand that was potent to save him, had fed the fires of their vengeance during the six years that he was creating his capital.

As we sit in the Plaza and watch the Sunday morning worshipers leaving the Cathedral, memory harks back to that other Sunday in 1541 when the implacable Rada and his devoted band swept across it to make Pizarro pay a dramatic price for his perfidy toward Almagro, and to press to his lips the bitter cup of death he had so remorselessly forced both Almagro and Atahualpa to drink to its utmost dregs.

As they move through the square, one of them sidesteps a pool of water. "What!" exclaims the irascible Rada. "Afraid of wetting your feet, when presently we will be wading in blood up to our knees? Go back! This is no adventure for weaklings!"

"TRAITORS! HAVE YOU COME TO KILL ME?"

Thrusting aside all barriers at the Palace entrance, threading the narrow passages that still remain in the old building—passages that are mazelike and only wide enough for a single file—they move on to the Governor's quarters.

Hearing their bloodcurdling cries, the grim Conquistador dons his cuirass, but before he can adjust its fastenings they are upon him. He throws it aside, envelops one arm in his cloak, seizes his sword with the other hand, and throws himself upon them "like a lion roused in his lair."

"What, ho!" he exclaims. "Traitors! Have you come to kill me in my own house?"

Two fall under his sword. Others press forward in the narrow passage. He grapples with Narváez and runs him through. But now his own throat is pierced and he sinks to the floor as a torrent of steel finds his unprotected body.

With a finger dipped in his own blood, he draws the Cross upon the floor, and as he turns to kiss it "a stroke more friendly than the rest puts an end to his existence."

We leave the Plaza and go into the Cathedral. It is a magnificent structure, much larger than Pizarro built, but still not so grand as the one erected during the early years of the viceregal régime and destroyed by the great earthquake that wiped out Callao, the near-by seaport.

The high altar is of massive silver construction, containing, it is asserted, some of the very white metal with which Atahualpa vainly sought to buy his liberty. In the Chapel of the Virgin is a celebrated image presented by the Emperor Charles V of Spain, and in the Chapel Arcediano an original painting attributed to Murillo, representing Jesus and Veronica.

Here rests a glass-and-marble casket which is most interesting of all, for it contains the half-mummy, half-skeleton reputed to be the remains of the great Conqueror (see page 753).

A kindly verger lights a candle and I peer into side and top. Can it be, indeed, that twentieth-century eyes do actually behold the iron frame of Francisco Pizarro, whom Destiny had led from abandoned infancy, along paths that brought him now to the doors of starvation, now to the fields of conquest, now to the heights of wealth and fame, only to desert him and cause him to drink the bitter dregs of the cup of death alone?

THE ARRIVAL OF THE FIRST VICEROY

Leaving the Cathedral, we stroll out along the splendid concrete boulevard that leads up from Magdalena. Pre-Inca ruins, busy cigarette factories, and fine modern residences share its borders.

Perhaps it was along this very highway that the first viceroy, Blasco Núñez, made his triumphal entry, sent by his king to compose the internecine struggle that followed the fall of Pizarro. The royal procession moves in state as it enters the city from Túmbez. The viceroy rides under a canopy of crimson cloth, embroidered with the arms of Spain, and supported by stout staves of solid silver, borne by the members of the municipality.

A cavalier, holding before him a mace, bids the people give fealty to the representative of the Throne, and the procession moves on to the Cathedral, where the inspiring *Te Deum* is sung.

Then revolution comes upon the very heels of the viceroy's triumphal procession. He had ordered an embargo on cargoes of

Photograph courtesy Lieut. Comdr. R. Guzmán Marquina

A GLIMPSE OF MOLLENDO AND ITS ENVIRONS

With angry waves pounding the cliffs at its front door and a sea of sand forever threatening to sweep over it from the rear, Mollendo is nevertheless the busy port of that great hinterland served by the Southern Railway of Peru, which includes the Arequipa country, the Cuzco highlands, and the *puna* around Lake Titicaca. Here the South American Sahara comes down to the ocean.

silver and gold mined with slave labor and directed that all slaves be freed. Peru of that day would not stand for that.

He takes down the church bells to make muskets and depletes the treasury to put Lima in a state of siege. But then he flees, lands at Túmbez, is pursued by Gonzalo Pizarro, younger brother of the late Marquis, and is defeated. A slave beheads him; he is held too mean to deserve this attention at the hands of a soldier.

Gonzalo Pizarro now marches back to Lima. Even to this day the old city rings with the memories of the thrilling reception. As one strolls down the Girón de la Unión, out of the noise and bustle seem to come the glad "vivas" with which he was welcomed as "Liberator and Protector."

The streets are restrewn with boughs and flowers, the walls of the houses renew their embellishment of showy tapestries, the balconies are filled again with the beauty and wealth of Peru, and great triumphal arches rise once more to span the line of march.

Amid the strains of martial music and shouts of rejoicing and jubilee, Gonzalo

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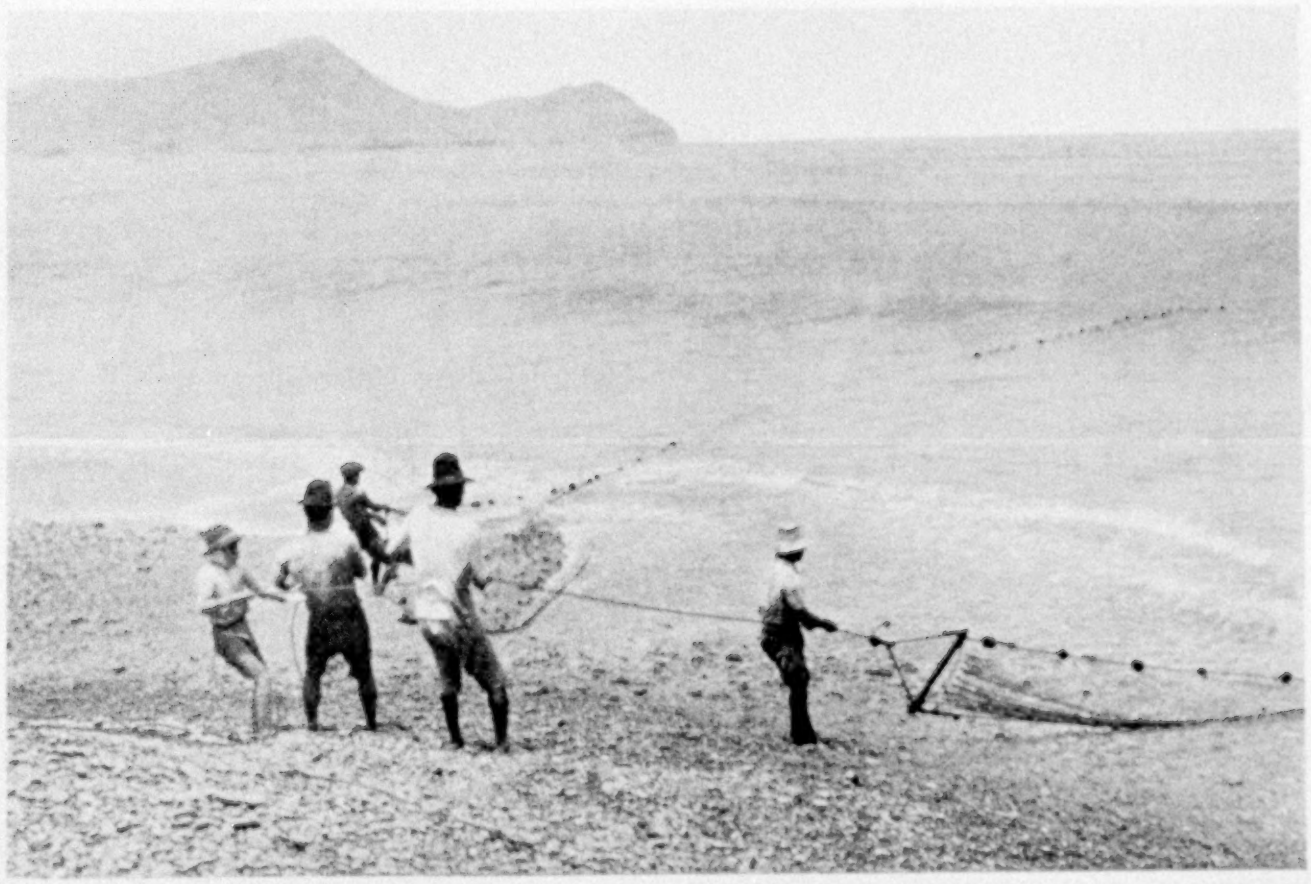
UNLOADING NORTH AMERICAN AUTOMOBILES AT CALLAO

At nearly every stop made by steamers from New York along the west coast of South America crated automobiles are transferred into lighters in this fashion. Even at Callao and Valparaiso, where there are docks, the steamship lines often lighter their cargo because of the heavy dock charges.



Photograph by Charles M. Little

PROVIDING FOR LIMA'S FISH-HUNGRY POPULACE

The presence of the chilly Humboldt Current offshore at Callao brings to those waters fish that are everywhere else in the world strangers to such latitudes. The result is that the fishermen capture many strange and palatable species.

© Publishers' Photo Service

LOADING HIDES AT CALLAO

Nearly one-fourth of Peru's exports move out of Callao, and the United States buys approximately two-fifths of everything the country has to sell. Such scenes as these recall the methods of loading hides off the California coast, so vividly described in Dana's "Two Years Before the Mast."

© Publishers' Photo Service

STOWING SUGAR IN THE HOLD OF A WEST-COAST LINER

Fifty-two rivers cross the coastal belt of Peru. Most of them are forced to yield their water for irrigation, and there are few finer cotton and sugar fields than those to be found in irrigated garden spots. Chile, Great Britain, and the United States buy most of the Peruvian sugar crop, and Great Britain buys practically all of the cotton.

Pizarro marches into the palace his brother had built and takes up his quarters in the still blood-stained precincts that had seen his brother die.

Charles V heard of the tragic events that brought death to his viceroy. The rebellion must be put down. Does he select some ruthless warrior to conquer those who had put the Incan hosts to the sword and beheaded his viceroy? Rather, he chooses a good priest, who is far less interested in secular affairs than in sacred matters.

THE STOLE AND BREVIARY CONQUER BLOOD AND IRON

Does he require a military force? "No," he thanks the Emperor, "with my stole and breviary I trust to do the work that is committed to me." Does he need grants of money? "No," again he thanks the Emperor, "I ask neither salary nor compensation of any kind. I covet no display of state or military array."

But Pedro de la Gasca did want and did receive blanket powers from the Emperor to pardon every revolutionist, to allow them the fruits of their victory; and the Emperor gave him every whit of power he himself possessed, putting his signature and seal to blank papers which Gasca could fill in as occasion demanded.

"The revolution has won all it sought. As President of the Royal Audience, I bring pardon and amnesty to all who participated in it. All I ask is that they renew their allegiance to the Throne."

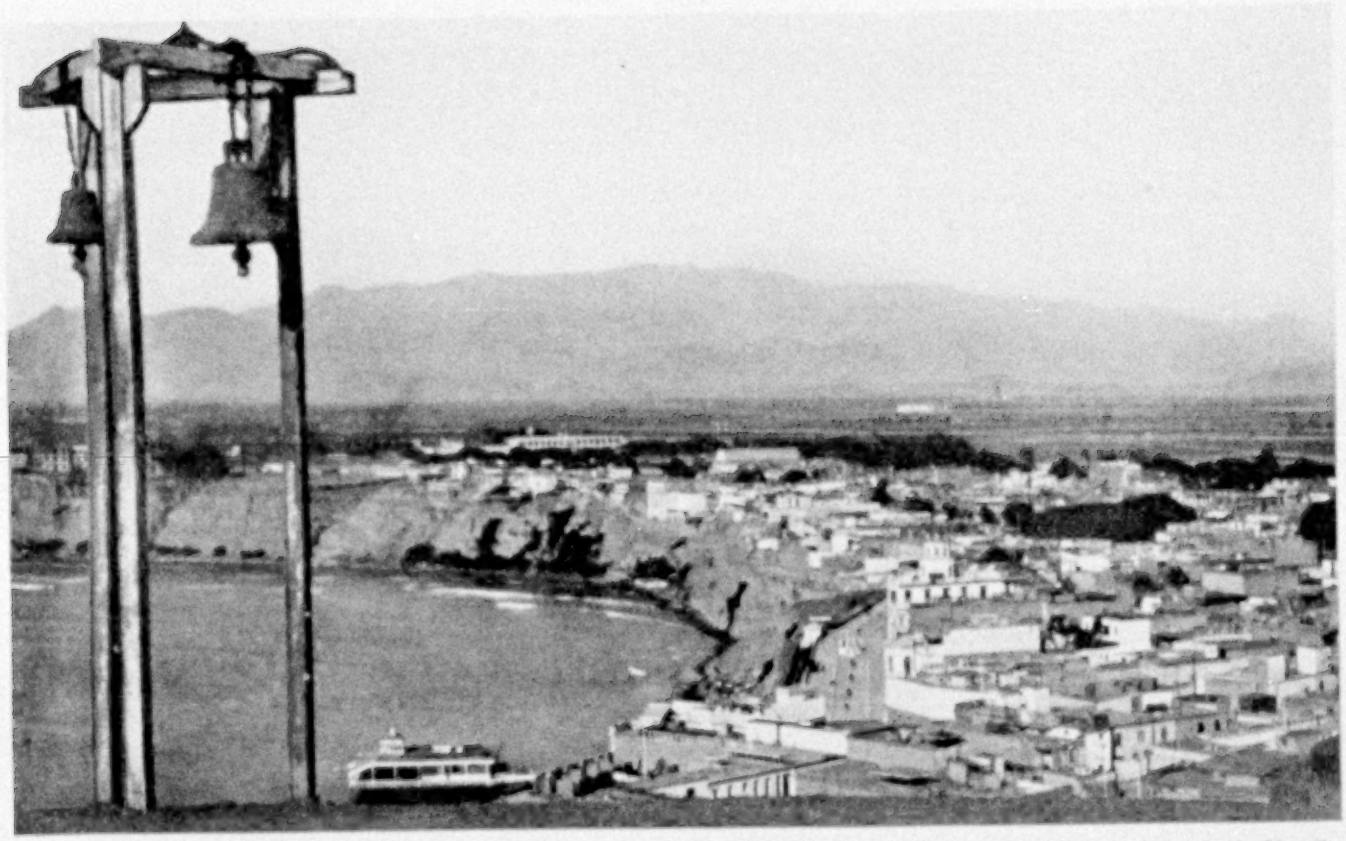
That was his story. Panama went over to him, Túmbez welcomed him. Lima is ready to desert Gonzalo Pizarro, whose faithful follower, Francisco Carbajal, entreats him to accept the Royal overtures. "I would pave his messenger's way to Lima with ingots of gold and silver," he exclaimed.

But Cepeda, erstwhile member of the previous Royal Audience, counsels Pizarro to resist. He does, and presently flees the city that so lately welcomed him as Liberator and Protector.

Photograph courtesy Pan American Union

THE DOS DE MAYO STATUE COMMEMORATES THE DEFEAT OF THE SPANISH FLEET AT CALLAO, MAY 2, 1866

The column is of Carrara marble and the figures at the base represent Peru, Ecuador, Bolivia, and Chile, allies in the war with Spain. That country had seized the Chincha Islands on the pretext of guaranteeing certain claims, and exacted such terms that Peru formed an alliance with Ecuador, Bolivia, and Chile. The Spanish fleet attacked the allies in the Chiloé Archipelago, then bombarded Valparaiso, and later attacked Callao, where finally it was defeated and the war ended.



Photograph by A. A. Hauff

CHORRILLOS, A BATHING RESORT, AS SEEN FROM MORRO SOLAR

Near the foot of the bluff is a fine brick walk and concourse, where the crowds gather to listen to band music and to take part in the daily promenades. The picture gives an idea of the width of the coastal plain in the vicinity of Lima (see, also, text, page 770).

© Publishers' Photo Service

"BUY A BANK"

There are in Peru deposits of excellent potters' clay, from which native craftsmen fashion vases and numerous ingenious toys, some of them in the form of small coin banks.

Photograph from George A. Makinson

WHERE MAKERS OF MODERN PERU GATHER

The upper-class Peruvian greatly prefers a profession to a business, and engineering is one of the professions that is most attractive to him, perhaps because of the difficult problems which the engineer is called upon to solve in building highways and railways in this up-and-down land. This is the magnificent home of the Lima Society of Engineers.

All Peru goes over except Pizarro's small band. He decides to give battle far up in the Andes. But his troops, led by Cepeda, who had counseled resistance, desert. Only Pizarro and gallant old Carbajal remain.

THE SUN SETS FOREVER ON THE PIZARRO RÉGIME

Pizarro, seeing further resistance vain, rides sullenly forward and surrenders. Carbajal, 82-year-old warrior that he is, singing his favorite old ballad:

"The wind blows the hairs off my head, mother;
Two at a time it blows them away!"

puts spurs to his rawboned horse and starts to the mountains. But he is taken.

When he and Pizarro reach camp the wellsprings of pardon and mercy have dried up. The kindly priest of amnesty has become the stern minister of justice.

They both are executed and their heads put in cages, which are carried to Lima and hung from a gibbet in the Plaza de Armas; Pizarro's private mansion is razed, the site strewn with salt, and a stone erected bearing an inscription stating that the spot has been profaned by the residence of a traitor and should ever remain bare.

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A DONKEY-BACK FRUIT STORE

The most important fruits grown in Peru are oranges, grapes, bananas, lemons, alligator pears, chirimoyas, papayas, loquats, and sapodillas. The chirimoya is used extensively in flavoring ice cream in Lima.

I sought in vain to find the site of Gonzalo Pizarro's residence or a trace of the stone. Even tradition leaves modern Lima without a clue of their whereabouts.

Everywhere one goes about old Lima there are scenes reminiscent of those tremendous years of the régime of the Pizarros; but, except for the casket in the Cathedral, the city seems not to have done either the elder Francisco or the younger Gonzalo the slightest honor.

What a contrast there is between Lima's latest thirteen years and that stirring first thirteen! A new era has dawned, and a modern city not only is rising around the old Lima, but even the old city itself, with all of its nearly four centuries of existence, is combining successfully the ancient and the modern.

The keynote of the new development is the fine new Avenida Leguía, leading from the old city to the suburbs. The traveler might compare it with one of those beautiful boulevards that extend from Washington to its neighboring communities. It has central parking throughout much of its length, ample walks, innumerable park benches, and a lighting system that is the last word in illumination engineering.

As one drives down this delightful thoroughfare, over to the right is the Country Club, a magnificent structure with environing golf links, polo fields, tennis courts, and swimming pool—like a bit of Westchester County dropped down in Peru.

And what a site for the outdoor life of the élite of the capital it is! Away to the south rises Morro Solar, cross-and-

Photograph by Johnson Brothers

AN AËRIAL MAP OF THE CITY OF THE KINGS

At the lower left corner are the Rimac River and the Central Railway yards. In the left middle distance rises the two-towered white Cathedral, fronting on the Plaza de Armas (see page 730). The square in the center is the Plaza San Martín, the circle at the bottom the Plaza Dos de Mayo, and that at the right the Plaza Bolognesi. The structures in the near-by park, which is the Government Zoölogical Garden, are the Exposition Palace, housing the National Museum, and the Industrial Exhibit Building. The avenue between Plaza Bolognesi and the park is the Paseo Colón (see illustration, page 729).

XUM

Photograph courtesy Pan American Union

TRAGEDY AND ROMANCE HAVE HAD THEIR DAY IN THE HISTORIC PRESIDENT'S PALACE ON THE PLAZA DE ARMAS

This great squat structure was first occupied by Francisco Pizarro, then by a succession of viceroys, and latterly by the presidents of Peru.

Photograph by Ewing Galloway

LIMA HAS ONE OF THE FINEST COUNTRY CLUBS IN SOUTH AMERICA

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THE CATHEDRAL AT LIMA FROM THE PLAZA DE ARMAS

Around no open square in all the Americas cluster such memories of tragedy and triumph as around the Plaza de Armas. In the Cathedral was sung the *Te Deum* that marked the arrival of the first viceroy. In the President's Palace, also fronting on the Plaza (see page 751), Francisco Pizarro died at the hands of the implacable Rada. Here Gonzalo Pizarro was welcomed as a deliverer, and at the next turn of Fortune's wheel his head hung in a cage on a gibbet (see text, pages 742 and 748).

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A GLASS CASKET IN THE CATHEDRAL AT LIMA CONTAINS THE REPUTED MUMMY OF FRANCISCO PIZARRO

"A faithful attendant and his wife, with a few black domestics, wrapped the body in a cotton cloth and removed it to the Cathedral. A grave was hastily dug in an obscure corner, the services were hurried through and in secrecy, and in darkness, dispelled only by the feeble glimmering of a few tapers furnished by these humble menials, the remains of Pizarro, rolled in their bloody shroud, were consigned to their kindred dust." Thus passed the great man of blood and iron. The inscription on the casket reads: "Captain General Don Francisco Pizarro, founder of Lima on January 18, 1535. Died June 26, 1541. On the 26th of June, 1891, his remains were deposited in this urn by resolution of the Provincial Council of Lima and through the initiative of the Mayor, D. Juan Revoredo" (see, also, text, page 741).

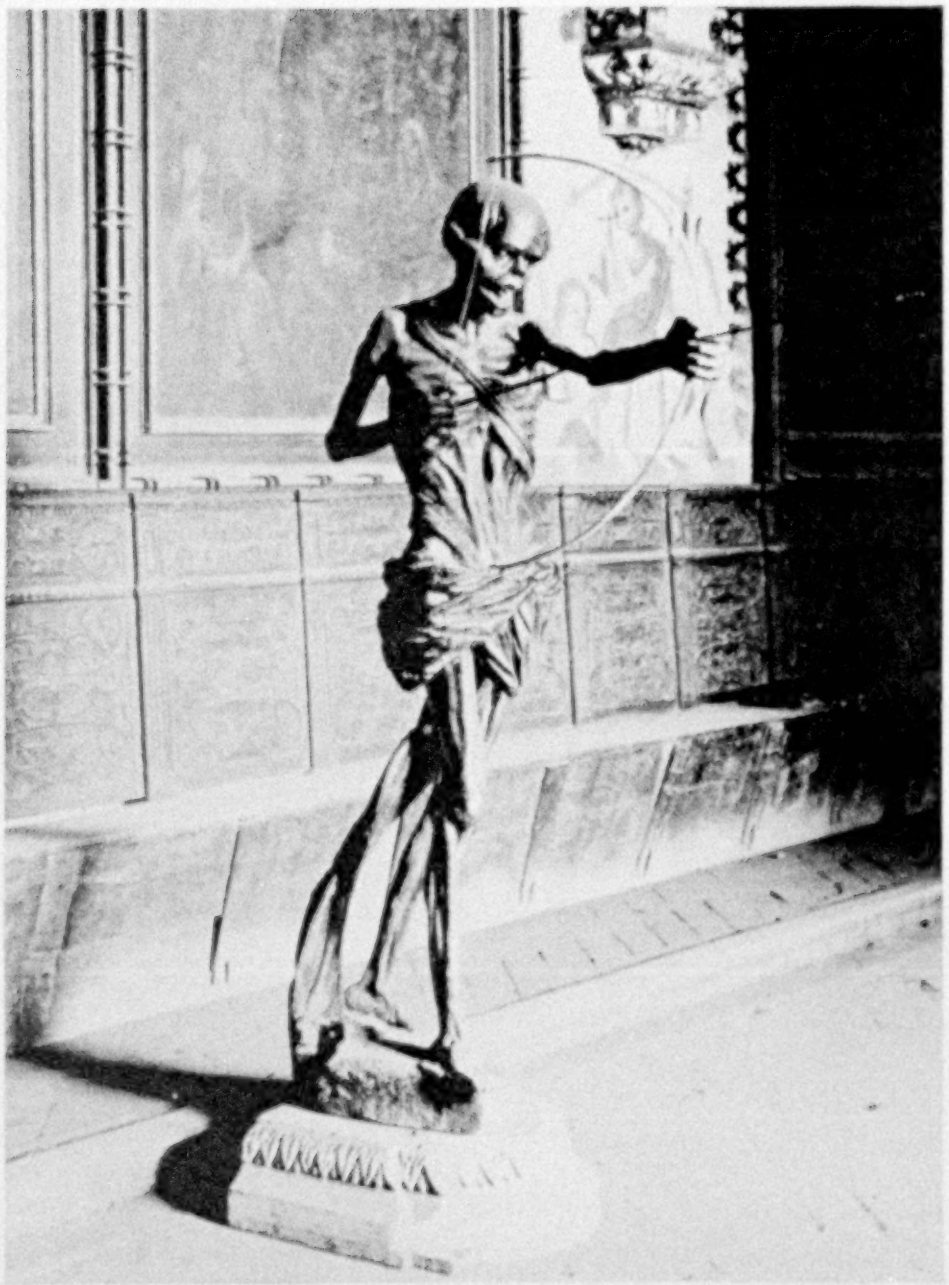
chapel-crowned, mounting perpetual guard over the Brighton of the west coast, Chorrillos. Beyond stands the bold series of ridges that borders the fertile valley of the Lurín (see page 747).

To the west the broad Pacific dashes its white-crowned rollers upon the level beach and San Lorenzo adds a glorious figure to the marine view. To the east the rocky billows of the mighty Cordilleras rise, each successive crest above its predecessor, until at last, in the blue of the distance and the azure of the sky, earth and air seem to melt into one.

As one stands and watches the sinking sun throw its golden light upon the majestic slope of the Andes, what a riot of pastel beauty and kaleidoscopic color comes and goes!

The now nearly horizontal rays touch each buttressing ridge and higher billow of stone with the magic of their brush, and soft mauves, softer purples, and soothing browns appear and disappear. The rainbow for the moment gives all the glories of its hues to the matchless mountains.

The old city is almost entirely girt about by new and broad avenues, with



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A WOODCARVER'S CONCEPTION OF DEATH

The statue is one of the unique works of art in the San Agustin Church, one of the most ornately decorated edifices of the Peruvian capital.

here and there fine circles and attractive squares embellished with statuary in marble and bronze.

NEW LIMA—A TRANSFORMATION

Razing here, building there, installing modern water and sewerage systems, tearing up rough, age-worn cobblestones, putting down smooth, modern concrete and asphalt in their stead, opening up new highways both to the mountains and the sea, and developing motor routes to the outlying regions of the plain, the makers of New Lima are transforming the city of the Pizarros much as Alexander Shepherd transformed the Washington that had departed from the plans of L'Enfant.

Old Lima, as well as the newer section that circumscribes it, is sharing in the new order of things. True, it is and must remain an area of one-way streets, for its thoroughfares are so narrow that even street cars must observe the one-way law. Likewise, the sidewalks are so lacking in elbow room that only two people can pass one another at a time, and the one on the outside must keep a close watch lest he be struck by a passing trolley.

But, for all that, there is an air about the old city which grows on the visitor. The *gallinazos* (blue-necked turkey buzzards) have lost their rôle as the official scavengers; the ox-cart has given place largely to the motor truck, the old barouche has abandoned the streets to the modern automobile, and the patient panniered donkey is making his last stand before the unrelenting assaults of modernity.

THE OLD PALACE IS REJUVENATED

Even Pizarro's stern old palace is feeling the urge toward modernization. Its present forward-looking and brilliant incumbent, President A. B. Leguía, is restoring the National Palace of Peru much as President Roosevelt restored the White House at Washington (see page 751).

Introduced to him by the American Ambassador, the President graciously showed us through the fine old structure and had many comments to make on the maze of narrow passages. He took pride in the

Photograph courtesy Pan American Union

THE GALERÍA CARMEN IS ONE OF THE NOTED SHOPPING CENTERS IN THE PERUVIAN CAPITAL

The upper-class women of the old viceregal city give much attention to their dress and, as a group, are as faultlessly gowned as the women of any city in the Southern Hemisphere.

beautiful Pizarro fountain he had unearthed in one of the patios, pointed out a fig tree supposed to have been planted by the Conqueror in another, and beamed with pride as he told of the restoration of the state banquet hall and of the fine 150-foot carpet which the native Indians of the *puna* country have woven of alpaca wool.

In days gone by, there was no street that had a single name throughout its length. Each block had its own particular designation. The two streets that lead from the Plaza San Martín to the National Palace are six blocks long. Each possessed six different names, one for each block.

The municipal authorities wanted to change all this and gave each street a single designation for its entire length. The one they called the Girón de la Unión and the other the Girón Carabaya.

But the populace would have none of it. The man who did business on the

northwest side of the Plaza de Armas still wanted to have his store on Escribanos, and the one who held forth on the next block still insisted he was doing business on Mercaderes, and they continue to do so. Consequently the Girón de la Unión is swallowed up by the several *calles* which compose it.

These may be named without modern-day rhyme or reason, and they certainly are without alphabetical or other indication of their sequence; but the people cling to them, despite whatever confusion it costs the post office, however much it may perplex the visitor, and whatever harvest it may bring the taxi drivers.

A WILD RIDE OF A FEW YARDS

Many interesting stories are told illustrating how this mysterious system works. One concerns a stranger who hailed a taxi in Calle La Merced and asked the chauffeur to drive him to "Baquijano veinte cinco." The driver did not bat an eye, but drove like Jehu up Jesús Nazareno, skidded on two wheels into Girón Carabaya, raced around Plaza San Martín, and whirled up through Boza, landing his shaken passenger at the address given—on the same street, but simply in the next block from where he started!

Mercaderes tells us of the day when that block was the Wall Street of Lima, and Escribanos of the public letter writers who were sheltered under the portals on the west side of the Plaza. Calle Mantas proclaims the square where the ladies of Peru's golden past "spent their husbands' substance in riotous purchase of shawls, homespuns, Indian textiles, and lingerie."

On Girón Carabaya we find Divorciadas, where unhappy marriages were broken; and on Girón Camaná one passes through Plumereros, where the feather-duster trade flourished. In Espaderos the sword makers held forth, in Plateros the silversmiths, in Zapateros the cobblers, and in Petateros the mat makers. The calle now called Jesús Nazareno was originally Guitarreros, in the days when the Castilian caballeros, with their guitars, infested the sidewalk after nightfall singing lovesongs to the fair señoritas.

THE STREET OF THE DONKEY DRIVERS

Here is a calle called Borriqueros, recalling the days when there were no railroads and when the donkey drivers were the chief transportation agents. Not far away is another named Borricos, the street of little donkeys. Bargaining in Borricos for donkeys and in Borriqueros for drivers, travelers to the sierras were able to fit out their trains. Calle Polvos Azules tells us where the blue dust lay thick in the road when the 'prentice boys ground chalks for the dyers' vats.

The Calle Mariquitas (Street of the Little Marys) memorializes three charming Marías, each so lovely that no one could determine to which the Golden Apple should be awarded. Here is the calle called Comesebo, but history does not record who ate grease there; and there is one called Suspiro (the Street of the Sigh), but how it won its name or who sighed history fails to record.

Calle Desamparados is a street where stood, on the site of the modern railway station by that name, a monastery whose doors never were closed to those who were weary and heavy laden with the burdens of life, the abandoned and the heartbroken.

Thus is the history of Lima's past written in her streets, in names that the municipality long has wanted to wipe out in favor of through designations and numbered blocks. But the people of the city cling to their streets with a devotion that will not permit convenience to triumph over romantic ties with the past.

A GARDEN IN WHICH PORCELAIN FLOWERS VIE WITH NATURE

In wandering about the old city, one comes upon many an architectural relic of the days of the viceroys; but, among all of these, none is more impressive than the monastery of San Francisco. There one may be ushered into a porcelain garden where the artistic tiles of the cloister compete with the living flowers that bloom in the garth they inclose.

No one has described more beautifully the effect of this porcelain garden than Mr. F. P. Farrar, of *The West Coast Leader*. "Here," he says, "is a porcelain garden, a ceramic border of springtime, where the blues of delphinium and lupine, the yellow of cytisus and the gold of colchicum, the creamy white of arabis and the mauves of aubrietia, blend into the fresh foliage of the overhanging trees and the azure of the new-washed skies."

"BALSAS" FLY THE WATERS OF LOFTY TITICACA

High in the heart of the Andes, this lake is large enough and deep enough to be navigated by very sizable steamers as well as by the native *balsas,* or rush-boats (see below).

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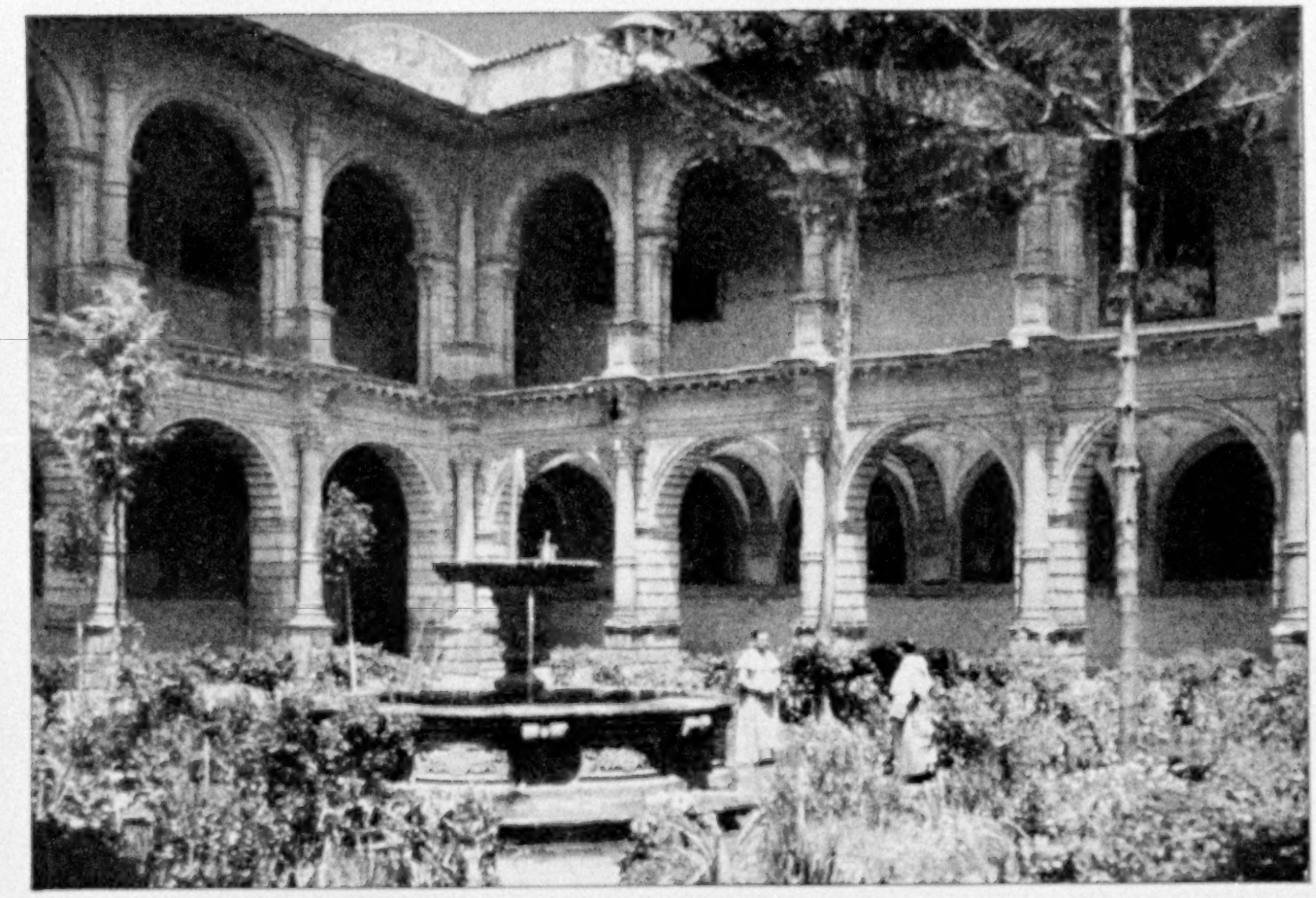
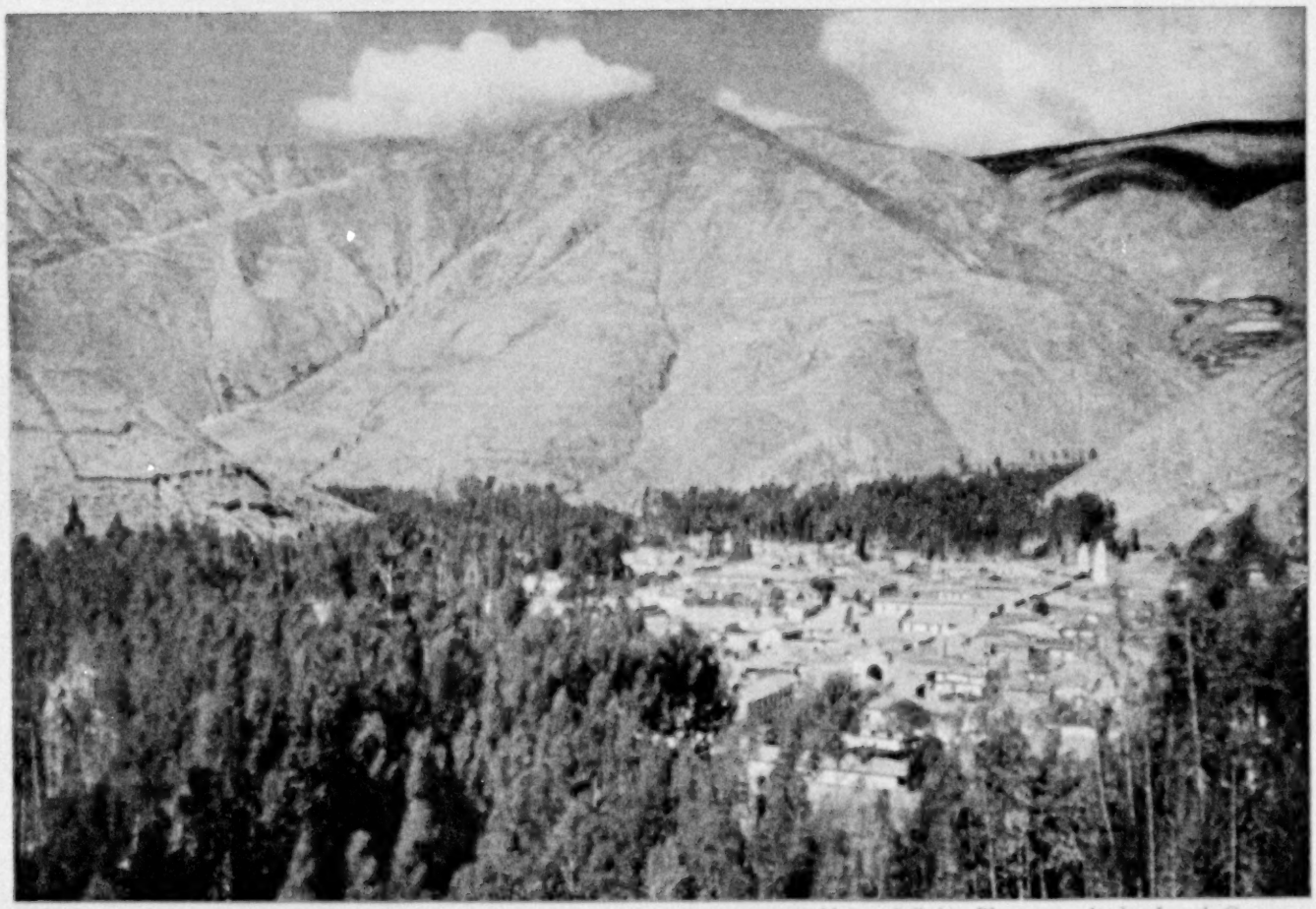
THIS FISHING FLEET CANNOT SPEND MUCH TIME ON THE WATER

In the Bay of Puno, Lake Titicaca, grows a giant bulrush known as the *tortora.* Ages ago the people learned to dry these and make them into bundles, with which they fashioned their fishing boats. These odd craft, buoyant when new, quickly become water-logged and frequently must be hauled ashore and dried out.



MERCEDARIOS HAVE CREATED A GARDEN OF RARE CHARM

Built of stone taken from ancient Inca structures, the monastery of La Merced, in Cuzco, is of Moorish design, and is famous for its gardens. The Brothers are expert horticulturists and have introduced many new species of plants (see also Color Plate III).



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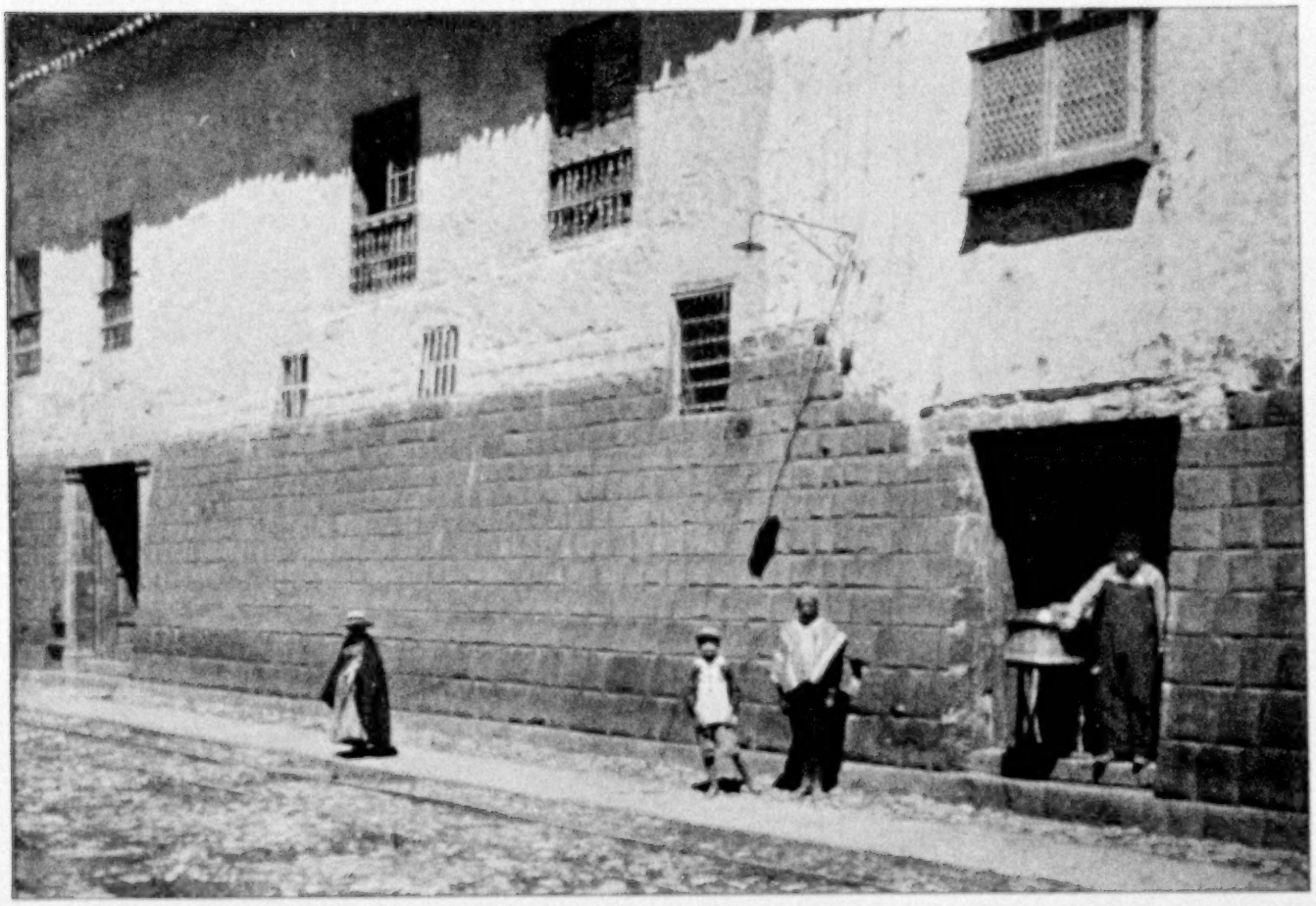
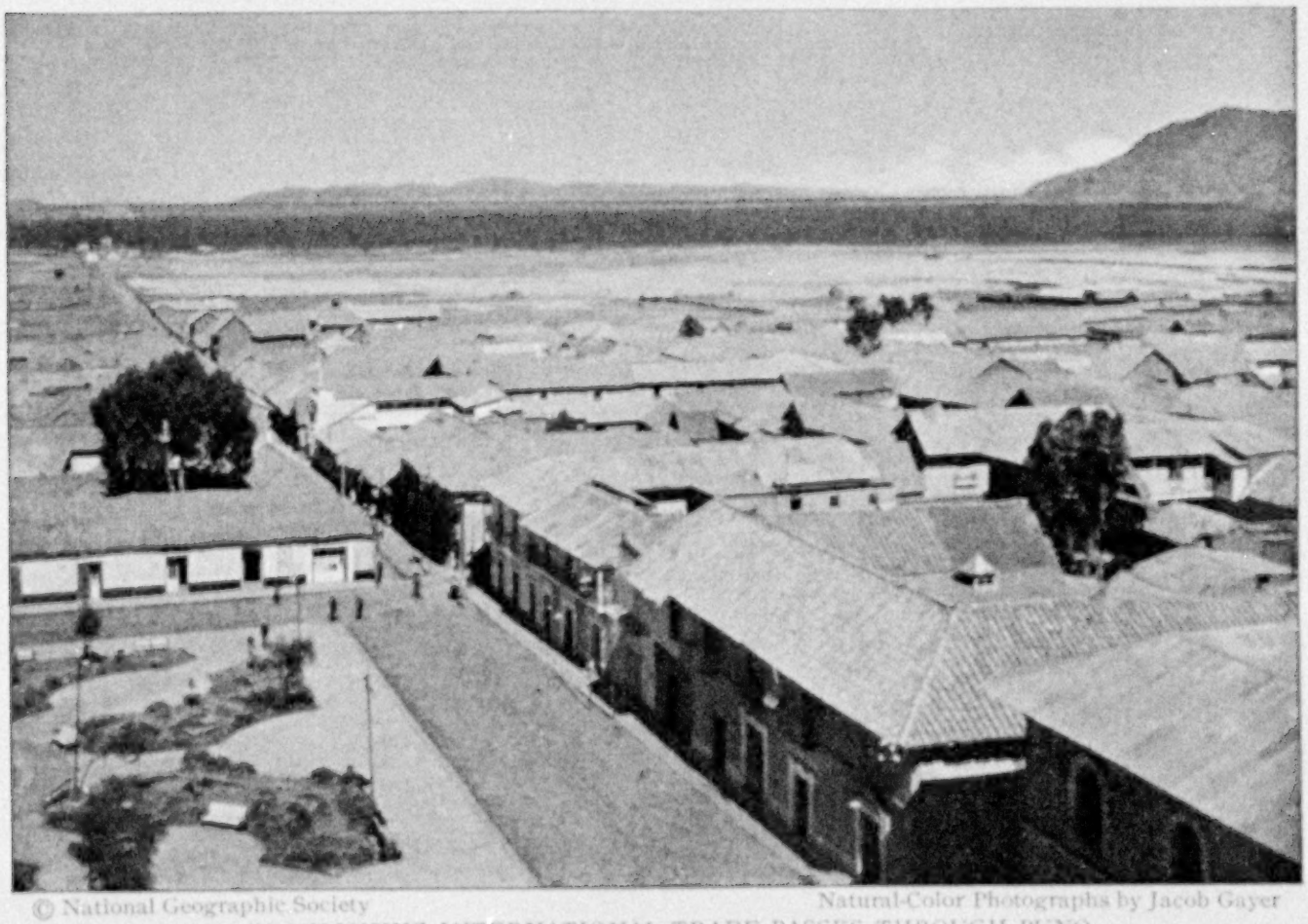
MOUNTAIN-GIRT TARMA NESTLES IN A GROVE OF EUCALYPTUS

One of the stations on the combination rail-motor-mule-canoe-steamer route between Lima, near the Pacific, and Iquitos, on the Amazon. It also has a landing field that the Peruvian Air Service uses in its flights between the *montaña* (wooded region) and the arid coast.



THE OLD AND THE NEW IN CUZCO

The stone walls date from Inca, if not, indeed, from pre-Inca times; the adobe above is Spanish; while the electric light, fixed in the adobe and casting its shadow on the stone, is, like the street-car track, of recent American origin.



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A FLOURISHING INTERNATIONAL TRADE PASSES THROUGH PUNO

Much of the foreign commerce of Bolivia, a country without a seacoast, travels across Peru. The route runs by rail from Mollendo on the Peruvian coast to Puno on Lake Titicaca, thence across that body of water by steamer, and again by rail to La Paz, the Bolivian capital.

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Natural-Color Photograph by Jacob Gayer

HERE "IRON HORSES" STORM THE LAST RAMPARTS OF THE ANDES

This photograph was taken from Ticlio, one of the world's highest stations on a standard-gauge railway. The llamas grazing in the foreground are used for carrying copper ore from the small mines in the mountains to the railroad.

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Natural-Color Photograph by Jacob Gayer

HUANCAYANS CELEBRATE THE FIESTA OF THEIR CITY'S PATRON SAINT

Dressed in costumes hired for the occasion, the women in elaborately embroidered robes and the men in knee trousers, they dance to the music of homemade harp, flute, and violins.

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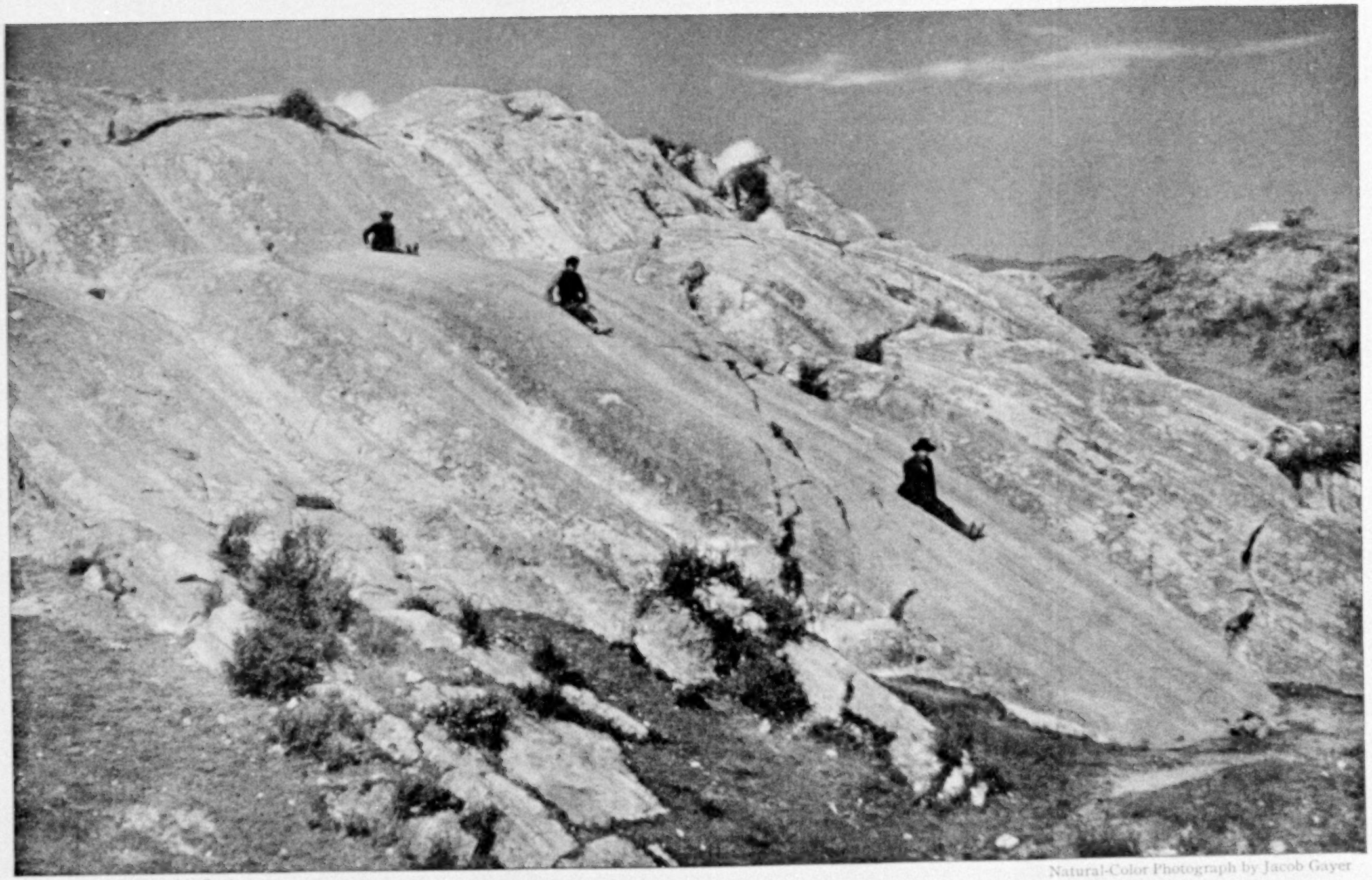
Transparency by Hashime Murayama

LOOKING DOWN ON THE PERUVIAN CAPITAL FROM SAN CRISTÓBAL

Beyond the Bull Ring, where many a sanguinary contest has been held, flows the Río Rímac, life-giving river of the valley where Lima lies. Beyond the river is the main part of the viceregal capital, built by Francisco Pizarro.



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YOUTHFUL INCAS, PLEASURE BENT, MAY HAVE WORN THIS ROCK-SLIDE SMOOTH

Boys of modern Cuzco (see Color Plate II) use this curious rock formation near the ancient ruins of Sacsahuaman for tobogganing. Leaders of the National Geographic Society-Yale University expeditions to Peru believed that the near-by ruins were probably religious and astronomical rather than military structures, and that they were built by a race forgotten by the time the Incas rose to power.

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COSTUMES WORN BY CHOLA WOMEN OF PUNO, NEAR THE BOLIVIAN BORDER

In the highlands of Peru life is such a bitter battle that frills and furbelows have no place, and styles seldom change in this part of the world.

The charm of the story of the origin of this porcelain garden almost equals the beauty of the ceramic triumph itself. On a November morning in 1619 a vast crowd had gathered in the Plaza de Armas, for there was to be a public hanging, and these events were Roman holidays for the populace.

The public crier had announced: "The Warrantable and Royal Audiencia of this City of the Kings has condemned to suffer a shameful death on the gallows Alonso Godinez, native of Guadalajara, in Spain, for the murder of Marta Villoslada without fear of judgment human or divine. Let him who did so pay the penalty! This sentence is to be read in the presence of all lest they meet a like end! Let justice be done!"

The condemned man had taken his stand beneath the noose and the hangman was nervously adjusting the fatal knot. Suddenly a monk pushed his way through the throng, climbed the gallows platform, and handed a parchment to the captain of the guard. After the latter had read it, the two engaged in a moment of animated conversation, after which the padre led the condemned man away and into the portals of the monastery of San Francisco. The crowd, disappointed, hung about the Plazuela de San Francisco discussing this strange overthrow of justice and berating those who had denied them their holiday.

THE GIFT OF THE GOOD DOÑA CATALINA HUANCA

But later the reason for reprieve became known. That morning the condemned man had made what he thought would be his last confession on earth, to the prior of the monastery. He said that he was a potter by trade and that he had learned the art both of making and setting tiles.

Years before, Doña Catalina Huanca had brought from Spain a magnificent collection of tiles for the decoration of the new cloisters at San Francisco; but neither plan nor a tile setter had come with them, and Lima had no tile setters. So for years the tiles had been piled up in a corner of the monastery; many were stolen and more were broken. Would Providence ever open a way for their setting?

Here seemed to be the answer: the prior saw an opportunity to let the man who had murdered a woman in a drunken brawl repent his sins in a lifelong task of setting these splendid tiles. So he went to the Viceroy to implore the pardon of the murderer, and the Viceroy, a descendant of the Borgias, seeing poetic justice in remitting the penalty of the scaffold and imposing a task of service that would require a lifetime, granted the commutation of sentence.

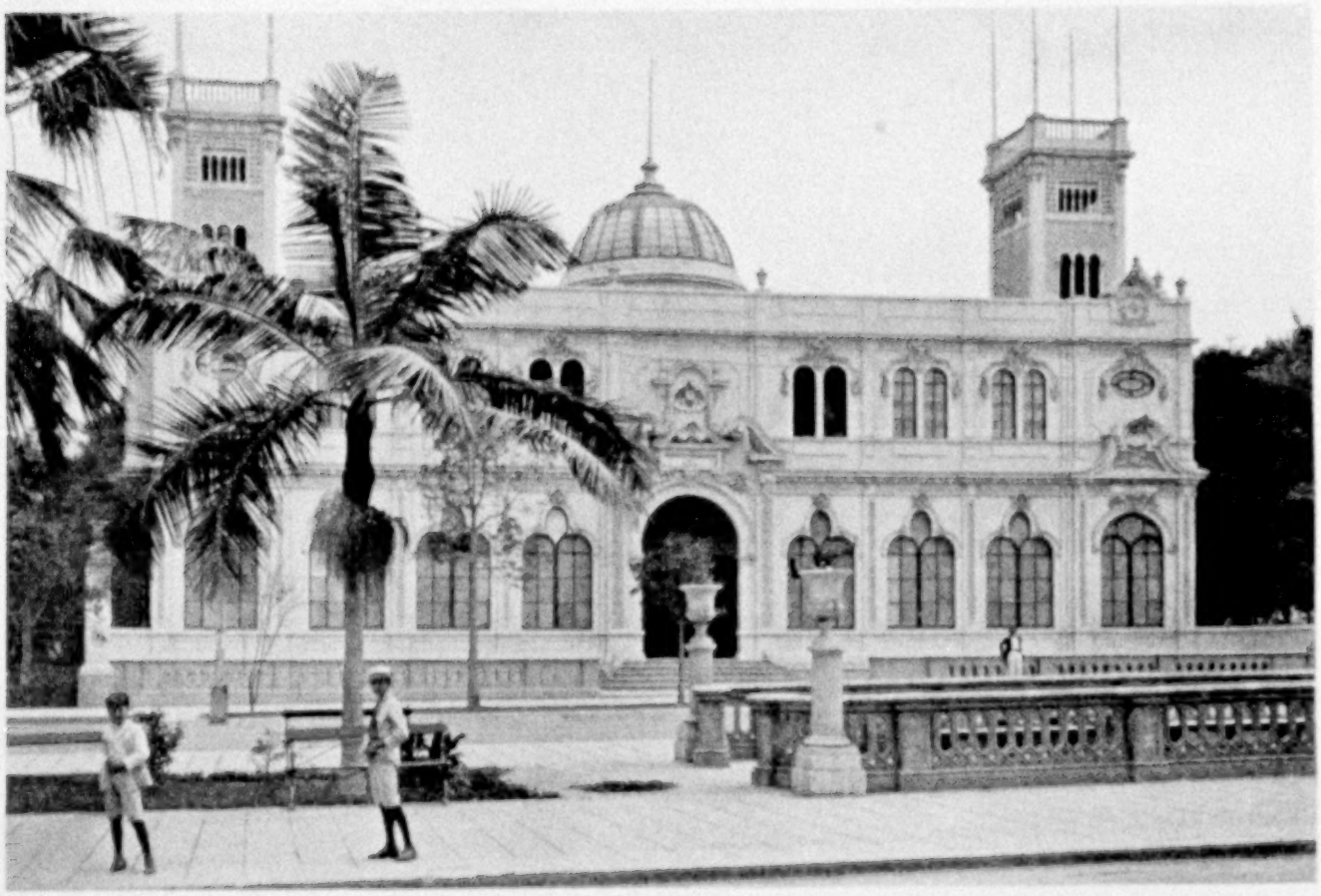
One can see to-day the wisdom of that act of mercy-tempered justice. Alonso Godinez was a true artist, who loved his work and threw his soul into it. To-day "the walls blossom with pictures which in their mellowness, richness, and seductive beauty rival those of Alhambra itself; and it is doubtful if outside of Spain there is to be found a finer example of porcelain entablature in the heyday of its art than here."

The inner wall of each ambulatory has from seven to fourteen panels, and almost every angle in each tile in every panel is of a varying design, each so similar to its neighbor that there is no sense of any break, no distraction of styles or subject, "but one harmonious pæan of commemoration."

These panels, almost life-size, showing a host of Franciscan saints and martyrs, form an illustrated page from the history of the order. Here is León Garazuno, transfixed and crucified with two spears; there San Francisco Solano preaching to the Indians; and elsewhere Saint Samuel being beheaded by an executioner, whose face is obliterated with a blank tile.

THE BROWN-ROBED PADRE AT THE WICKET

It was brown-robed Padre Díaz who peered through the little wicket, opened the massive door, and showed me through this splendid monastery. A sense of decay hangs over the place—not the kind of decay that is ugly, but rather that softening touch of time which has a charm of its own. Here was a printing plant, as untidy and as simple as those of my early country-weekly memories; there a room filled with all kinds of unused ecclesiastical and other furniture; on the ground floor stood a panniered donkey with the rein of his bridle thrown over the arm of a sculptured saint.



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THE MUNICIPAL INSTITUTE OF HYGIENE, LIMA

Six years before the United States held her Centennial in Philadelphia, Lima was having a national exposition of its own. The Exposition Park then laid out, the avenues opened, and the buildings erected reacted upon the Peruvians much as the Chicago World's Fair reacted upon the people of the metropolis on Lake Michigan, begetting an era of city-planning that has come to its fruition under the nation's present Chief Executive.

But even such incongruities seemed deprived of their power to clash when one's next steps led to a little rotunda ceiled with a fretted lacework dome of carved cedar, apparently hanging suspended in mid-air like the domes of Michelangelo.

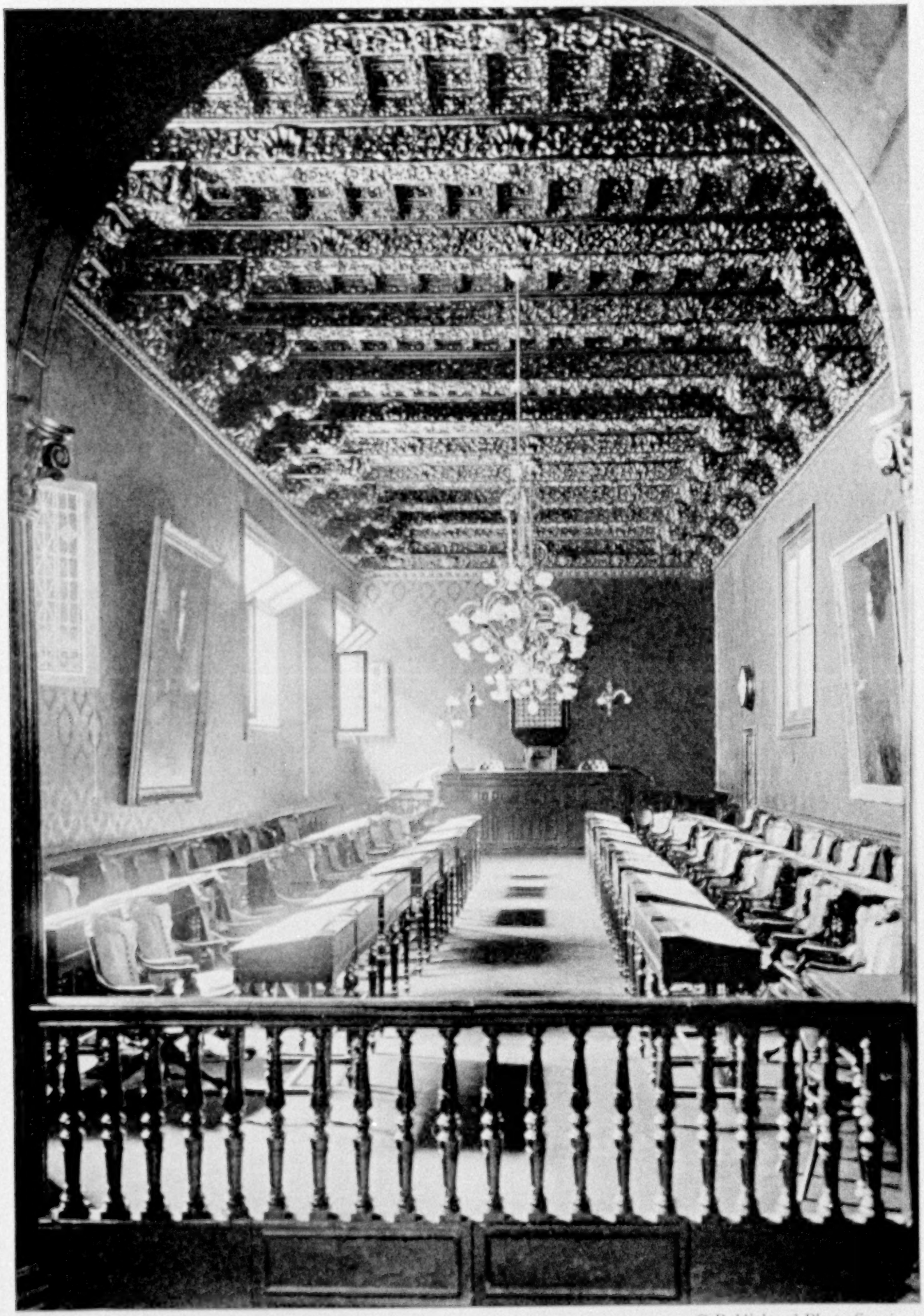
From the monastery Father Díaz took me into the church of San Francisco, graced by magnificent statuary, splendid wood carving, and rare frescoes, with choir stalls, each of an individual pattern, deeply carved from quebracho wood—and "quebracho" in Spanish means "break-ax."

Lima is peculiarly a city of churches, with some 70 in its limits; and, with nearly four centuries of outstanding ecclesiastical tradition behind them, the people are much given to buying religious objects. I never have seen a city with as many stores handling exclusively articles of sacred art.

The attire for church occasions is perhaps the most conservative in the New World. Even those women who dress in the latest Parisian modes elsewhere put on their plain black *mantillas* when going to church. In some congregations those who come in fashionable headgear are told politely to remove them and substitute their mantillas before being seated.

PERU'S STATE DEPARTMENT IS A PALACE OF MOORISH MAGNIFICENCE

Among the fine old residences of Lima one of the most impressively beautiful is the famous palace of Torre-Tagle, once the home of the marquises of that name, but now the headquarters of the Ministry of Foreign Relations. Built in the Moorish Arabic style, its façade is broken by two beautiful balconies, splendidly carved and partially covered with a fretwork lattice. The escutcheon of the Marquis de Torre-Tagle remains above the lintel of the imposing portal of the structure. The patio is paved with glazed tiles and the galleries surrounding it are made of the choicest carved woods, supported by Corinthian pilasters. The grand staircase



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WHERE THE UPPER HOUSE OF THE PERUVIAN CONGRESS DELIBERATES

The carved mahogany ceiling, dating from viceregal days, is one of the most elaborate in South America. In the days of Spanish supremacy in the New World, this was known as the Hall of the Inquisition.

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A LANDMARK IN LIMA FOR TWO CENTURIES

The Marquis of Torre-Tagle erected this fine old palace in viceregal days and it was continuously occupied by his descendants until 1918, when the National Government acquired it to house the Ministry of Foreign Relations (see, also, opposite page).

is of unusual beauty and magnificence, while the private chapel has a gilded altar.

The rank and file of houses of Lima are built of mortar and plaster, yet it is surprising what artistic effects can be produced by the Peruvian wielders of the trowel. Most of the stores are still without windows, having only the huge shutters that are put up and drawn down as the business hours come and go. The artistic disorder with which the drygoods emporiums display their wares beggars description, and the wonder is that, exposed as these are to dirt, dust, and sunlight, they keep even a modicum of their original freshness.

The penitentiary stands on one of the main avenues of the city, and one passes its portals whenever taking a motor ride. It has a magnificent brass archway that compensates for any gruesome visions the structure conjures to mind. For generations this brass was hidden under unprepossessing paint—so long, indeed, that its existence had passed out of mind. Then one day the paint got so thick that it had to be scraped off, and Lima resurrected one of its little architectural gems.

The City of the Kings long has been famous for its brilliant social life, with a constant succession of luncheons, teas, dinners, dances, *champañadas*, and receptions. Nearly four centuries of wealth, leisure, and opportunity have written their impress of culture on the descendants of the nobility and official classes of the colonial régime.

Most of the higher-class residents, so to speak, board with their cooks. The latter are given specified allowances each day, and out of that are expected to keep their masters' tables up to the exacted standard, and to keep the market men with whom they deal happy through gratuities doled out to them.

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A PATIO-BORDERED CORRIDOR IN THE TORRE-TAGLE PALACE

GOING TO MARKET FOR BEANS TWO FEET LONG

The public market covers a whole square. The central court, which is roofed over, is occupied by meat, fish, and vegetable stands. Around this court and facing the sidewalk are innumerable booths and stores, where one can buy anything, from a Panama hat and a Spanish shawl to the cheapest gewgaws that Europe exports.

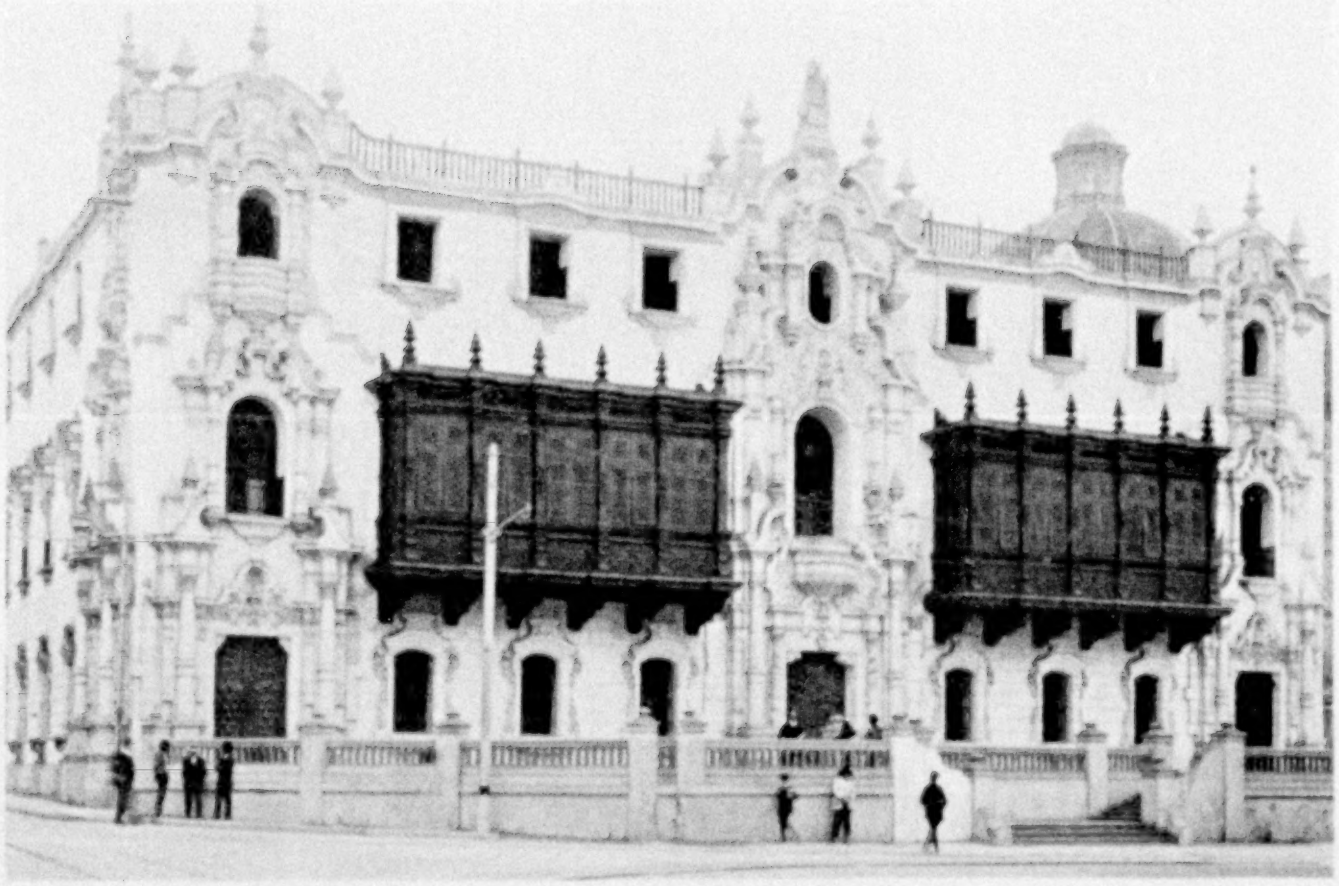
String beans two feet long and yuccas of the dimensions of a baseball bat vie with pomegranates, guavas, and alligator pears for the attention of the market-basket folk.

Fruit sellers, with baskets at each end of a pole borne on the shoulder, march up and down the street with their wares; milkmaids astride little donkeys and seated on native saddles, to which are slung two huge milk cans, guide their peripatetic dairies in and out of traffic. Barefooted, straw-hatted, poncho-covered Indians from the Andes rub elbows with ladies attired in the latest Paris creations in street wear.

In the fish markets no fish are allowed to enter after 9:30 a. m. or to be sold after 3 p. m. All remaining after the latter hour must be dumped on the refuse heap.

One of the delicacies of the Peruvian luncheon and dinner is the señorita. Oh, no; the people are not cannibals; this kind of señorita is only a shellfish resembling a scallop and usually served raw. Such native dishes as *papas con ají*, consisting of potatoes and pepper, with an egg-and-tomato sauce; and *papas rellenas*, a fried concoction of mashed potatoes mixed with olives, onions, eggs, and raisins, are dear to the Peruvian heart. Baby goat takes the place of spring lamb, and with the masses guinea pig washed down with *chicha* is a favored dish.

From the old-fashioned diversions of hanging around cantinas, standing on street corners, or attending bull fights and cock fights, Peruvian men and boys have



Photograph courtesy Pan American Union

THE ORNATE RESIDENCE OF THE ARCHBISHOP OF PERU ADJOINS THE LIMA CATHEDRAL (SEE PAGE 752).

turned largely to athletics, and association football has become to them what sand-lot baseball is in our own country. The Bull Ring is still there and cocking mains exist, but they are rapidly losing their appeal.

Down Ica way is the center of cock-fighting enthusiasm. One fan, the story runs, wanted to get some particularly fine birds, so he commissioned a friend to buy them. This friend bought in London an East Indian cock and two hens for $100, gave the ship's butcher $5 for carrying them across, and promised him $5 more when he delivered them to the consignee.

But when the ship got to Valparaiso, on its trip around the Horn, some of the friends of the butcher came aboard. Wanting to show them a bit of sport, he set the hens upon one another and one of them was killed. The captain put the butcher in the brig for two weeks, fined him, and allowed him only one drink of rum a day. From the surviving cock and hen many famous fighting birds were reared.

Lima is most fortunately located with reference to both winter and summer resorts, whither the people can go quickly whenever climatic conditions tend to become oppressive.

TO A SUMMER OR WINTER RESORT IN FIFTEEN MINUTES

A fifteen-minute motor ride brings one to Miraflores; and the wealth of its flowers and foliage justifies its name. Here is the American-British colony. The streets are lined with double rows of trees, and some of them have central parking, while a few ramble about in that charming informality of a fine old English town. The houses borrow all the best in Spanish architecture and combine it with the most comfortable in British-American residential construction.

Barranco begins where Miraflores ends, and delightfully straggles along the edge of an uneven cliff about 100 feet above the sea, at the base of which is a fine beach reached by a long, covered ramp and a peculiar elevator not unlike the Lynton-Lynmouth lift in north Devon.

Chorrillos joins Barranco as the latter emerges out of Miraflores. Although totally destroyed during the war with Chile, it has been rebuilt and is the meeting place

SHOES FROM AMERICA'S FACTORIES ON SALE IN THE HUANCAYO SUNDAY MARKET

Market day in the cities of the highlands of Peru is like the old-fashioned Court Day in Virginia—everybody expects to see everybody else there; and, as everybody has to work on the haciendas on the other six days, Sunday is reserved for barter day.

of the wealth and fashion of Peru during the summer season (see page 747).

THE FRIENDLY WINTER SUN OF CHOSICA

Some thirty miles up the Rimac, at an elevation of 2,800 feet, is Chosica, Lima's principal winter resort. When the low, damp, dripping fogs of winter hover over the capita city, the suburban trains are crowded with those who know that, however dismal it may be on the coast, at Chosica the sun is surely shining, for this winter suburb is above the range of the coastal clouds.

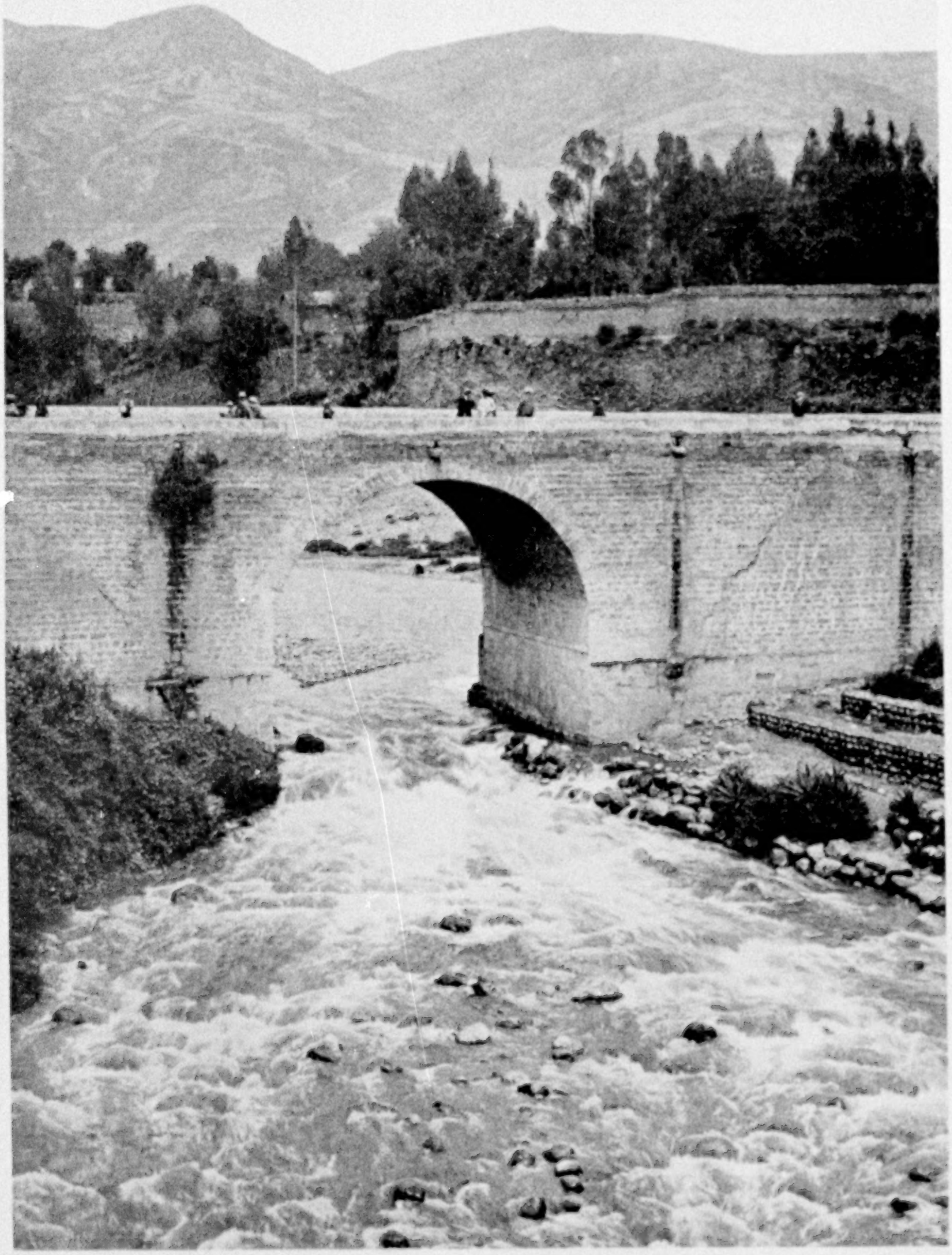
Two years after Lima was founded, Callao, its port, began to rise at the mouth of the Rimac. Here were laden the Spanish galleons that carried the wealth of the land back to Spain. Here, too, centered for generations the trade of all South America, for the royal edict was that even the trade of Buenos Aires and Montevideo should clear through Callao. Many were the times that it was pillaged by pirates. And then, on October 28, 1746, came the terrible earthquake which rivaled in destructiveness that at Port Royal, Jamaica, a half century before.

Of the city's 6,000 inhabitants only two remained to tell the story. But, unlike Port Royal, even such a catastrophe could not forever banish it from the map. A bigger and better Callao arose on the ruins of the destroyed city. To-day the Government is planning to build modern docks and customhouse equipment which will make it a port where cargo can be received and discharged with as much facility as shipments are handled in modern North American ports.

THE PERUVIAN BOOTLEGGER DEALS IN MATCHES

Lima is as fortunate in its larger environs as in its closer setting. Wherever a stretch of the coastal desert can be provided with water, an agricultural El Dorado takes the place of parched sands; and every few miles, both northward and southward, a fine stream sweeps out from the snow-crowned summits of the Andes.

Irrigation is therefore a miracle worker



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THE EARLY SPANIARDS BUILT THEIR BRIDGES FOR THE AGES

The short but turbulent watercourses of the western slopes of the Andes suggest Peru's potential wealth in hydroelectric power. While the development has come in comparatively recent years, the capital city is lighted, its tramways are operated, and many of its industries are run by electric power.

Photograph by Jacob Gayer

PLAYING BASKET BALL AT AN ELEVATION OF NEARLY TWO AND ONE-HALF MILES ABOVE SEA LEVEL

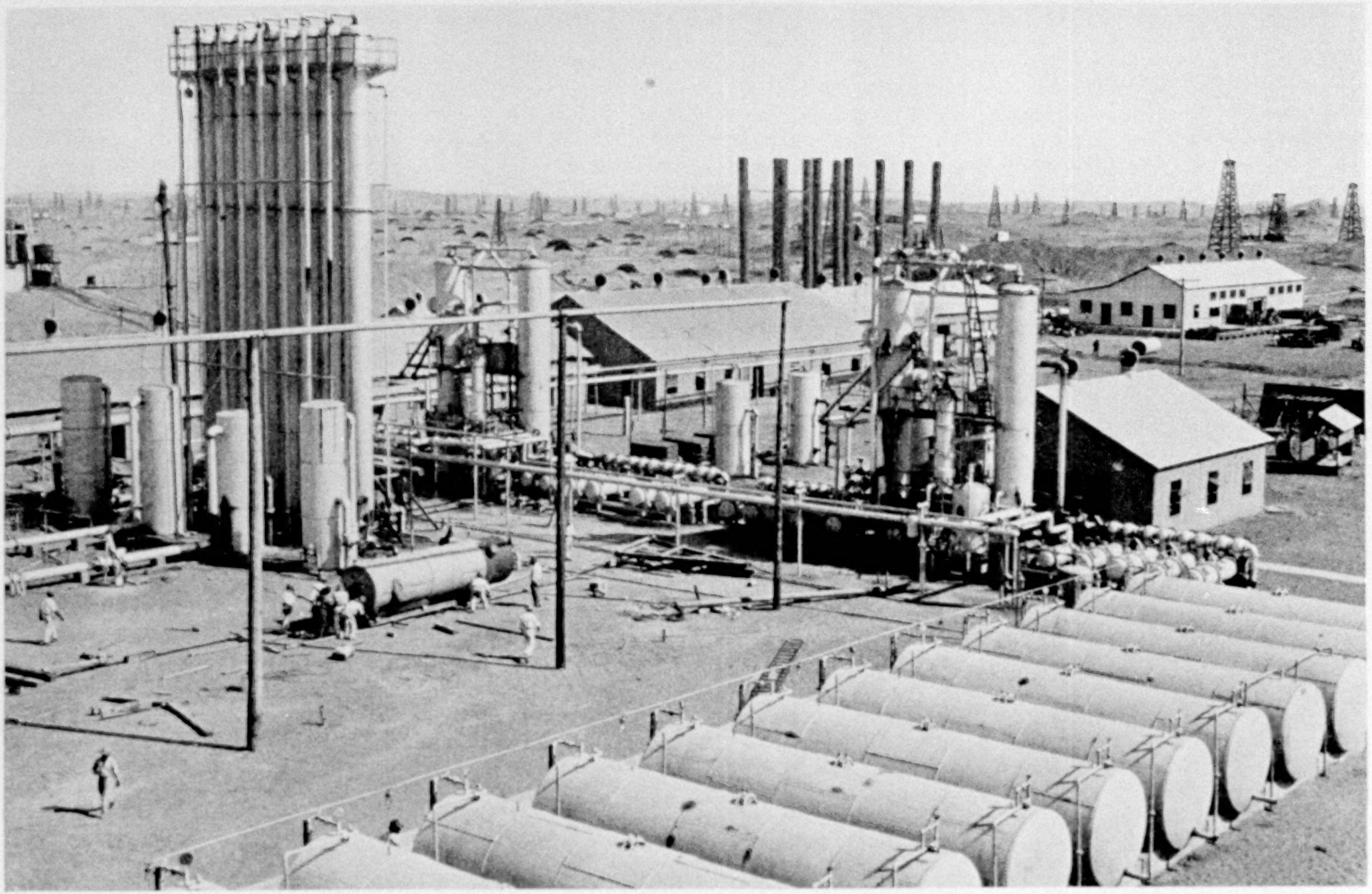
The company operating the smelters at Oroya for the great Cerro de Pasco mines have provided excellent school accommodations for their employees' children.

ready to transform barren wastes into fertile fields. So the Government is irrigating the desert with matches, paradoxical as that may sound. And that involves Peru in a "bootleg" problem of her own, though it has nothing whatever to do with spirituous liquors. Matches and cigar lighters take the place of beer and whisky as the bootleggers' wares, and when one embarks on a Peru-bound steamer in New York the bulletin board is found to carry a warning against taking foreign matches or cigar lighters ashore in any Peruvian port.

One of the nation's greatest needs is the establishment of new irrigation projects, through which new areas may be redeemed from the desert. Yet this costs money. The Government decided that its smokers should finance these projects, and the Swedish Match Company was on hand with an offer of $800,000 a year for the exclusive right to manufacture and sell matches in the Republic. This offer was accepted, the concession to run for 20 years. It sells wooden matches a little less than two inches long, 40 to the box; the wax ones, about one and two-fifths inches long, 35 to the box. Every time one lights a cigarette or cigar he is helping to make a new acre of land contribute to the country's well-being.

THE ELOQUENT STORY OF FOUR ALBUMS

There are four albums in the offices of one of the larger British houses in Lima



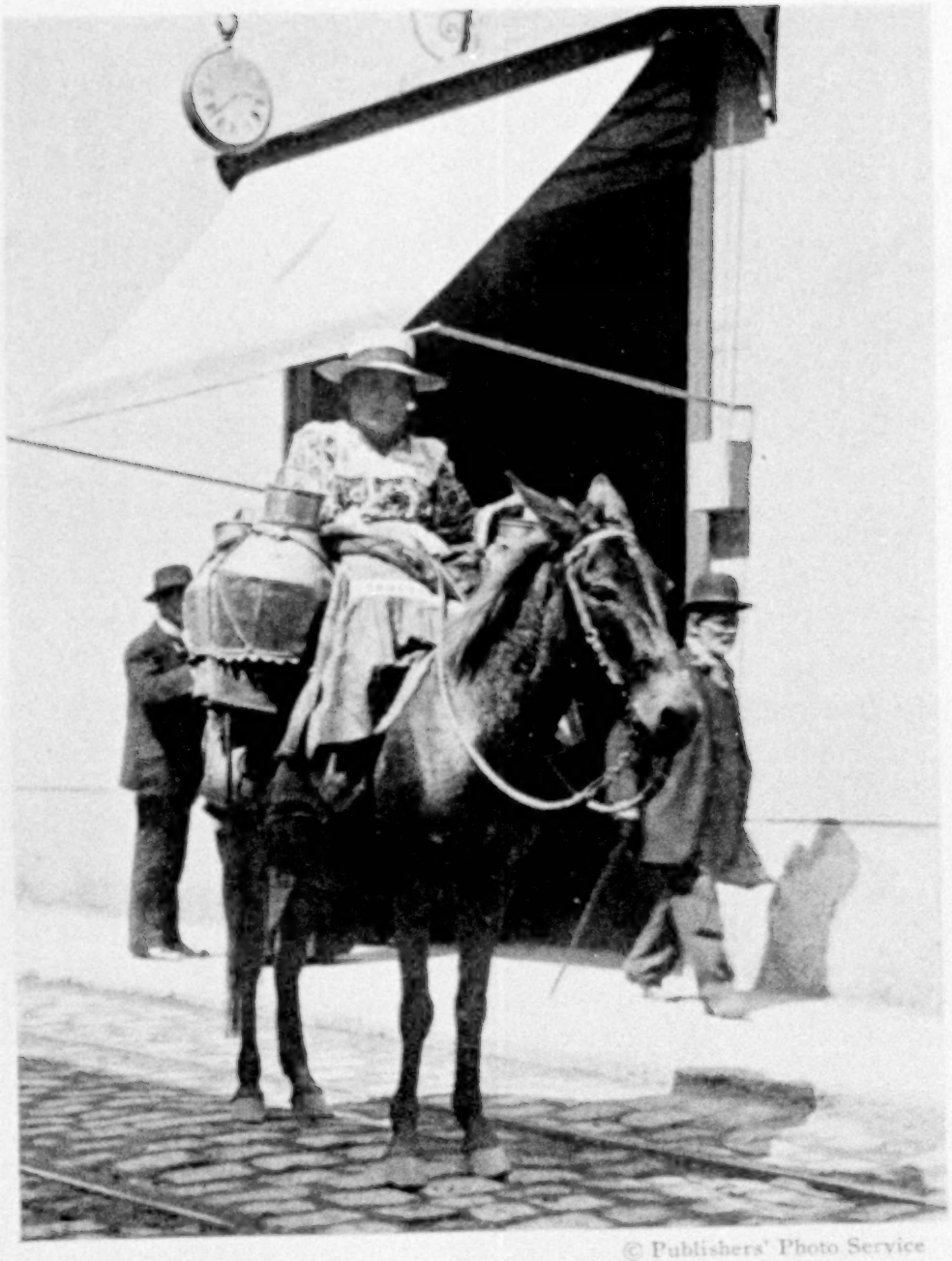
Photograph by Ewing Galloway

THE OIL FIELD AND REFINERY AT NEGRITOS, PERU

At the point where South America reaches its utmost west, just south of where Cape Blanco marks the southerly limit of the Gulf of Guayaquil, are the oil fields of Talara and Negritos. A more barren coast one hardly could hope to see, but at both places there are colonies of North Americans operating the plants and refineries.

QUICHUA INDIAN POLICE

When Francisco Pizarro conquered Peru he set up a native police force and gave them silver-bound staffs as emblems of their office. These the native police value highly and hand down from generation to generation.



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MILK DELIVERY IN LIMA

Mounted on ponies and donkeys, with great cans tied to their saddles, women ride about the streets of the city delivering milk, each customer furnishing her own container.

© Ewing Galloway

GARGANTUAN JUGS OF WINE BOUND FROM VINEYARD TO MARKET

Pack-horse transportation is widely used in Peru, owing to the lack of even fair carting roads. There are only a few hundred miles in the whole Republic that can be considered as passably good dirt roads for automobiles, although the Government has recently begun an extensive road-building program.

which tell an eloquent story of the rôle of irrigation and of capital in promoting the living standards of the people. They contain pictures illustrating the development of a large irrigation project by this firm, its destruction by the floods of 1925, its reconstruction, and its subsequent operation.

The first album shows a desert valley, with here and there a wretched hut inhabited by an undernourished Indian family. When the transformation began the available labor, recruited from far and wide, was so emaciated and underfed that a full day's work was entirely beyond its strength.

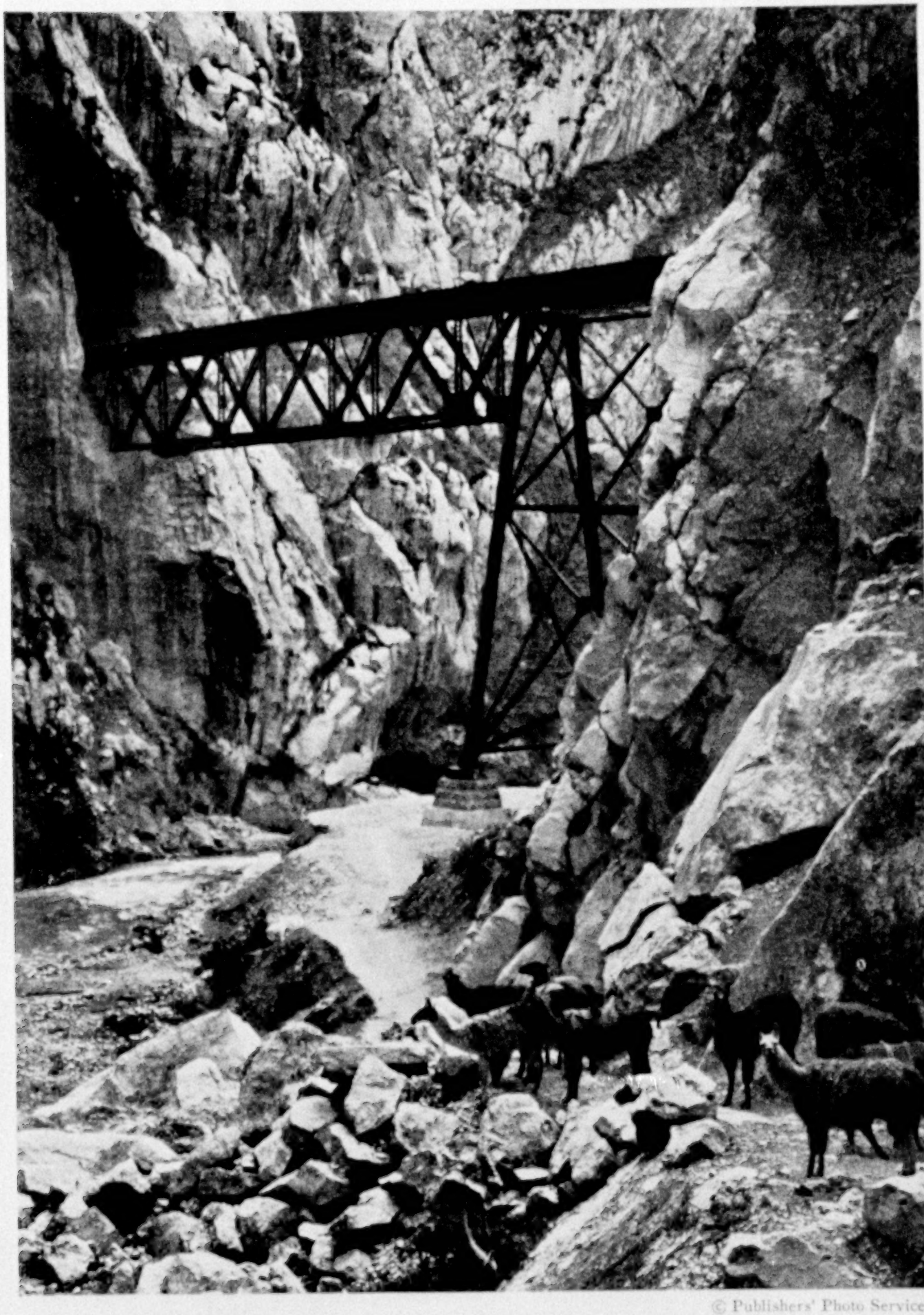
The contractors set in to build houses for the families of their laborers, to furnish them with adequate food, and to abolish the toll of poverty. The concluding pictures of this album show a contented, happy, and well-nourished lot of laborers and their families and give glimpses of the holidays of 7,500 people who had been able to transmute misery into comfortable well-being because foreign capital converted a desert into a garden.

The next album shows the flood of 1925, the first one within the memory of the natives. Higher and higher it rose. The adobe houses melted before the downpour as snow before a springtime sun. The rushing torrents swept away the sugar mills and cotton gins, tore out the railroads, carried the bridges from their abutments, and wrought general havoc.

The third collection shows conditions after the flood subsided, revealing that it indeed had torn down the whole structure of the erstwhile thriving community, from turret to foundation stone. Back it was to its original despair. What would become of those 7,500 people who had found a decent livelihood there? Must they go back to the unemployment, the pitiless poverty from which this industry had brought them?

CAPITAL DEFEATS CALAMITY

Happily, the fourth picture volume answers no. For the House of William and John Lockett had a frugal financial policy in days of its prosperity. It had laid aside



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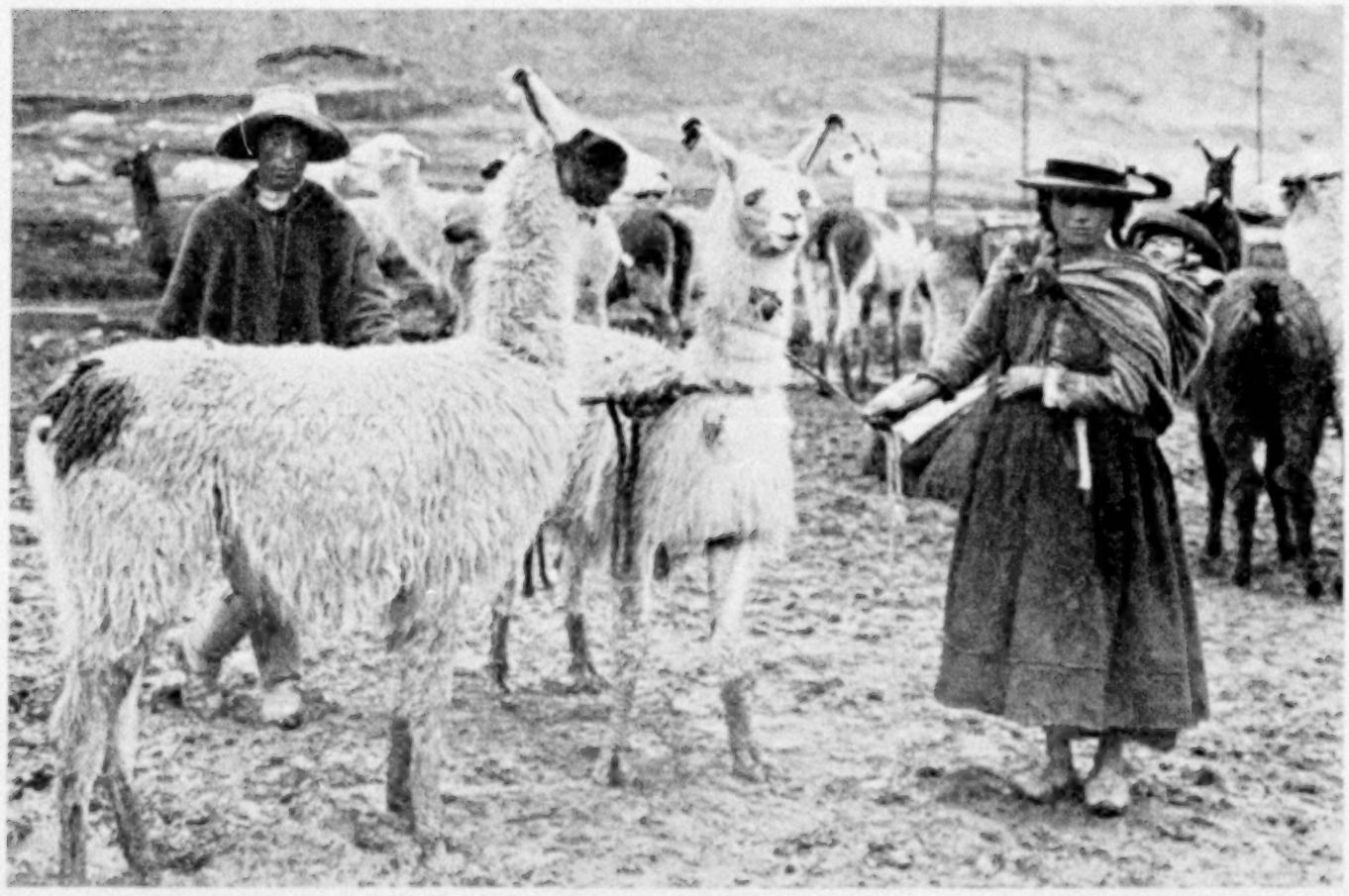
"THE BRIDGE OF THE LITTLE HELL," IN THE HEART OF THE ANDES

The lofty iron trestle connecting two tunnels suggests something of the wildness of the Andes; but even here there are llama trails, where the sure-footed little beasts creep along to reach some isolated village or mine (see, also, text, page 779).



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LLAMAS IN THEIR BEST BIBS AND TUCKERS

The two animals in the foreground, with their driver and his wife and baby, were photographed at Morococha Station, in the high Andes. Their ears are done up in stays and blue ribbons. These plucky beasts carry silver- and copper-ore concentrates from the outlying mines to the railroad. Their sureness of foot on the narrow trails puts even the donkey to shame and makes the mountain goat look to his laurels.

its savings and had established a good credit; so it was able to begin immediately the work of restoration and on an extended scale. As one turns the pages, it can be seen that every laborer was busy, and the final pictures show the rebuilding complete, the crops flourishing once more, and the thousands of natives again in full possession of the opportunities to earn a living wage.

Here, where calamity had wrought complete havoc and brought both labor and capital back to the first principles of their relationship, one could see the problem stripped to stark nakedness and realize what a tower of hope and refuge of strength capital becomes to labor in seasons of calamity.

Nature is a very hard mother in Peru. Capital is as essential to the quickening of the country's resources as are the waters of the melting Andean snow to the vivification of the sands of the Pacific plain. Without foreign capital, these resources must lie dormant and the masses face a hungry, lean existence. With it, hundreds of thousands of people can find profitable employment who now have little or none, thus enabling the Government to promote a program of decent housing, fundamental education, careful sanitation, and better living conditions, along with highway construction and internal development.

PERU'S FRIENDLINESS TOWARD THE UNITED STATES

Peru realizes the interest of the Government of the United States in seeing these things come about, and displays a friendly attitude toward our country that is refreshing to the Latin-American traveler. To the Peruvian the Monroe Doctrine has not become anathema; it still remains the friendly old oak which sheltered them from the blazing sun of European land hunger in the days of the Republic's youth; the sturdy old tree which still offers a kindly shade, beneath which the Americas

A SWITCHBACK SCENE IN THE ANDES

To the right of the center is a trainload of copper sheets and bars moving to the sea from Cerro de Pasco; in the upper right is a series of "staircase farms"; at the left is the Rio Blanco, and in the distance one of the scores of gorges through which Henry Meiggs built his railway.

may feel safe while they work out the New World's destiny unhindered by Old World interference.

At her back door Lima has one of the mightiest mountain areas in the world, and the wealth that comes down out of them from such great mines as those of Cerro de Pasco and from the smelters at Oroya rivals in value the streams of precious metals which flowed into the Lima of long ago on the backs of llamas and donkeys.

Excursion trains run from Lima nearly to the summit of the Andes every Sunday, over the Central Railway of Peru, and those who make the trip enter into one of the great wonderlands of the earth. Here Nature, ancient man, and modern civilization seem to have conspired to create the greatest engineering show ever staged.

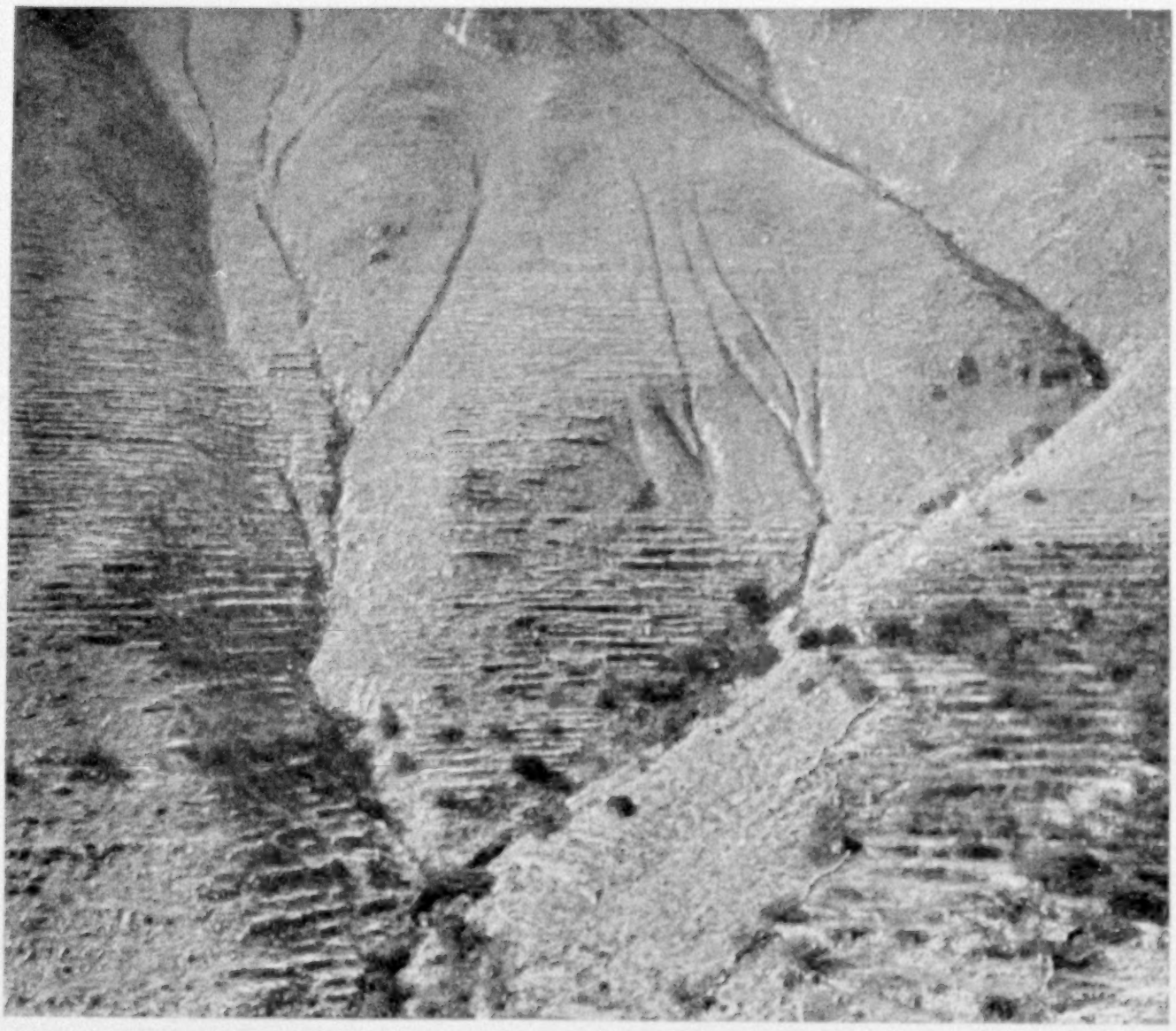
The mountains rise to a height of more than 17,000 feet at the lowest pass; the eastern faces of their subordinate ridges are smooth, and the western slopes usually are a riot of unweathered rock, where one may read in the thousands of broken and twisted strata the strength of the titanic hand with which Nature fashioned them.

The railroad, in its turn, shows how modern engineering can triumph over the obstacles Nature has placed in its path. Rising to a summit of 15,693 feet in the Galera tunnel, it has to pass through 61 tunnels, over 41 bridges, and around 13 zigzags or switchbacks.

It reaches nearly a mile higher than any standard-gauge railroad in North America, a quarter of a mile higher than the summit of Pikes Peak—even higher than Mont Blanc itself.

Here it takes the bed of the Rio Blanco and gives the stream a tunnel. At Puente del Infiernillo (the Bridge of the Little Hell) it passes out of a tunnel onto a bridge and into another tunnel. Near San Bartolomé it enters a covered way of concrete whose roof is the artificial bed of a stream it did not want to cross.

Henry Meiggs, honest absconder from San Francisco and engineering genius, began this line. Alexander Norris, no less



Photograph by Jacob Gayer

STAIRCASE FARMS IN THE ANDES

Untold thousands of acres of mountain-side land in Peru were redeemed long ago by Indians, who first built retaining walls about breast-high and behind these dumped a coarse, gravelly subsoil, which was overlaid with a fine, rich soil. Thus, to reclaim a single acre meant the laying of nearly 700 perches of stone and the handling of nearly 5,000 tons of soil.

a genius, completed the extension to Huancayo, and the Central Railway of Peru and its companion, the Southern, that goes to Cuzco, will long stand high among the engineering triumphs of the human race.

SCORES OF MILES OF STAIRCASE FARMS

Yet no less amazing than the magnificent engineering that drove the Central Railway three miles up to the summit of the Andes in a short stretch of 108 miles are the vast series of staircase farms which ancient man built on those mountain sides.* Mile after mile, from Chosica to Río Blanco and beyond, they stretch, often with the first terrace at the bottom of the gorge and the last one at the top of the ridge, with hundreds between. Their builders captured the waters of many an Andean counterpart of Yosemite Falls and led them along the mountain sides for miles, from which they sluiced down over the terraces below.

Whence came the soil that was filled in behind the stone retaining walls, or how many generations were required to bring all of those tens of thousands of acres of mountain slopes under cultivation one can only speculate; but that it involved the transportation of millions of tons of soil and the laying of millions of perches of stone is clear; and it is equally certain that we must go many, many generations

* See, also, "Staircase Farms of the Ancients," by O. F. Cook, in the NATIONAL GEOGRAPHIC MAGAZINE for May, 1916.

Photograph by Jacob Gayer

PASSENGERS BUYING FRUIT PROVISIONS FOR THE ANDEAN CLIMB

Here, at San Bartolomé, the Central Railway begins to climb in dead earnest, by means of 13 switchbacks, to get up over the Cordilleras. The engine is uncoupled, turned around on a turntable, hooked on to what had been the rear of the train, and climbs up to the next switchback. This delay provides a golden opportunity for the fruit-sellers. It is the women there who boom the Panama hat business.

behind the remotest age of the Incas to find the beginning of those reclamation projects, which constitute probably the greatest physical monument any vanquished race has left.

ANCIENT CIVILIZATIONS IN PERU

That ride from Lima to Oroya, which the Englishman nonchalantly refers to as "going up the hill," prepares one more fully to appreciate the story the ruins of Pachacámac and Chan Chan, on the coast, and Tiahuanacu and Sacsahuaman, in the mountains, have to tell of days that were old when the Incas were yet unborn.

It was one afternoon in late May that I visited Pachacámac, a two-hour motor ride down the coast from Lima. The road passes innumerable dunes as shifting as those of any desert. Here was the crumbling skeleton of some donkey unable to bear his load through the mire of dry sand between the Rimac and the Lurin; there a rude wooden cross which told of some *cholo* overtaken by death, with those about him too poor to carry his body into the environs of civilization for the rites of sepulture.

And then came Pachacámac, the Temple of the Fish God. On one side stretches the green-carpeted valley of the Lurín; on the other, dunes that suggest Sahara or Gobi. To the east tower the Andes and to the west rolls the Pacific.

Photograph by Charles M. Little

AN ALFRESCO SECOND-CLASS RESTAURANT AT MATUCANA

Halfway up the Andes the trains of the Central Railway of Peru stop for travelers to have luncheon, and the open-air restaurant does a thriving business in soups and stews. Market women here often wear Panama hats of a quality that can be duplicated in few stores in foreign countries.

The temple, built in three wide terraces, had a platform surmounting it. Built before the days of stair steps, the various stories were reached by ramps. Its glories are gone. Worked over by many expeditions and by unauthorized treasure hunters, it is a place of desolation, with here and there an exposed piece of a human skeleton or some trifling artifact to stir the imagination.

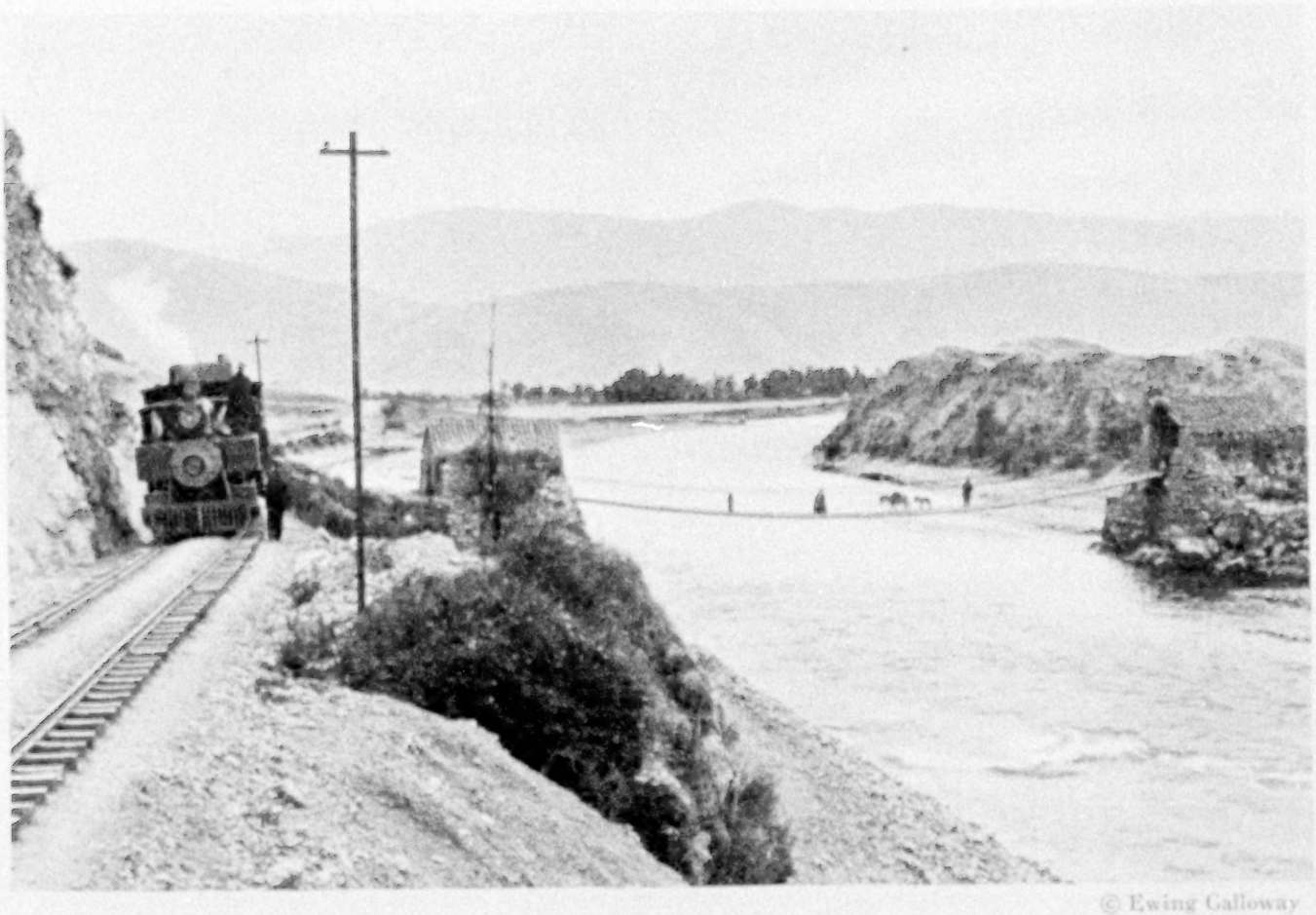
Climb to that ancient platform, look down to the coast, and there you will see two rocky islets. The old legend of the Fish God has it that they are Cavillaca and her immaculately conceived son, who fled and jumped into the sea when Uiracocha, the god father, disguised as a wretched mendicant, pursued them.

As I stood there the sun had become a magnificent ball of fire, all but ready to sink into the horizon waters of the Western Sea. Its mystic lights were playing upon the canyons and cliffs and ridges of the lofty mountains of Huarochirí, giving them all the contrasting colors of our own Painted Desert.

Here one was indeed face to face with some of the surviving remnants of a civilization which had disappeared and lived only in tradition when Hernando Pizarro, second brother of the Conqueror, rode down out of the mountains with his cavaliers, cast out the idols a succeeding civilization had worshiped through many dynasties, and then, shoeing his horses with silver, made his way back across the majestic Cordilleras by the headwaters of the Lurín.

PUSHING BACK ARCHEOLOGICAL HORIZONS

Those unbelievably numerous staircase farms along the Rímac and the Río Blanco, which are only a small part of the total for the whole Andean area, needed the toil of perhaps hundreds of generations to account for their construction.



© Ewing Galloway

AN OLD SPANISH BRIDGE INVITES COMPARISON WITH AN EXAMPLE OF MODERN RAILWAY ENGINEERING IN THE HUANCAYO VALLEY

Photograph by Charles M. Little

ABSENCE OF RAINFALL AROUND LIMA MAKES COUNTRY ROADS LANES OF DUST

There is striking contrast between the greenness of the irrigated fields along which they pass and these stifling highways.

The traditions of the Incas and the legends of the races they conquered add their testimony to the antiquity of the human race on South American soil.

But, going back to Chorrillos, I was to come upon what is perhaps the most startling evidence of all as to the remoteness of the horizons of prehistoric civilizations in Peru.

There lives in Chorrillos a Señora Porras, who is a daughter of a former President of the Republic. From him she inherited an exquisitely selected collection of archeological objects, many of them dating from the Stone Age.

Among the latter is a small bust done in clay and colored with native dyes. There is not a trace of the crude artistry usual for those vastly remote times. The features are sharp, and one can see that the sculptor was a master of his art, fully capable of making a photographic likeness.

It has the high forehead of western Europe, the slant eyes of a Mongolian, the high cheek bones of the Indian, the nose of an ancient Hebrew, the mustache of a Manchu, the mouth of a Turk, and a composite chin.

Clearly the figure is that of a man of high caste, perhaps some ancient ruler. What visions it arouses of a man of high intelligence as subject and of a sculptor of unusual ability as artist in ages before the use of metals was known!

Another *huaca*, as the burial relics are known, dates from an almost equally ancient period. It bears four heads in bas-relief. The sculpture is crude, where that of the other is refined. But one head is colored white, one red, one yellow, and one black. Yet even in the work of this crude artist it is easy to recognize the features of the Caucasian, the Indian, the Mongolian, and the Ethiopian.

WHENCE CAME THIS ANCIENT KNOWLEDGE OF THE RACES

Whence came, in that amazingly early age, this knowledge of widely scattered races and their physiognomic attributes? What stories Peru must have to tell of ages we hitherto have thought too remote for civilized human existence! And what new light upon the antiquity of man intensive research there may yet reveal!

Our time to say good-bye to Lima and to sail southward from Peru comes all too soon, even though Chile, Argentina, Uruguay, and Brazil lie ahead.

Truly, here is a land of a thousand romances. With its challenging inklings of prehistoric races, its stirring stories of Incan dominion, its thrilling record of the conquest, its amazing chapters of the deeds of the Pizarros, its scintillating history of viceregal times, its inspiring reminiscences of San Martín and Simón Bolívar and their battles of the clouds, and its pleasing picture of the modernization movement in the twentieth century, the country and its capital alike tax the imagination and grip the enthusiasm of the visitor.

And with all these scenes laid down in a theater that possesses all the contrasts of the Congo, Tibet, and an Australian desert, and among archeological traces of civilizations that seem to affirm their kinship alike to Egypt, Greece, Babylon, and Orient, they gather new fascination and arouse new speculations.

Notice of change of address of your NATIONAL GEOGRAPHIC MAGAZINE *should be received in the office of the National Geographic Society by the first of the month to affect the following month's issue. For instance, if you desire the address changed for your August number, the Society should be notified of your new address not later than July first.*

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The sun never sets on the Red-and-White Label. Campbell's Tomato Soup girdles the globe. Such fame comes to but few products. But the strikingly individual and delicious flavor of this soup has attracted to it an admiration that travels the earth. 12 cents a can.

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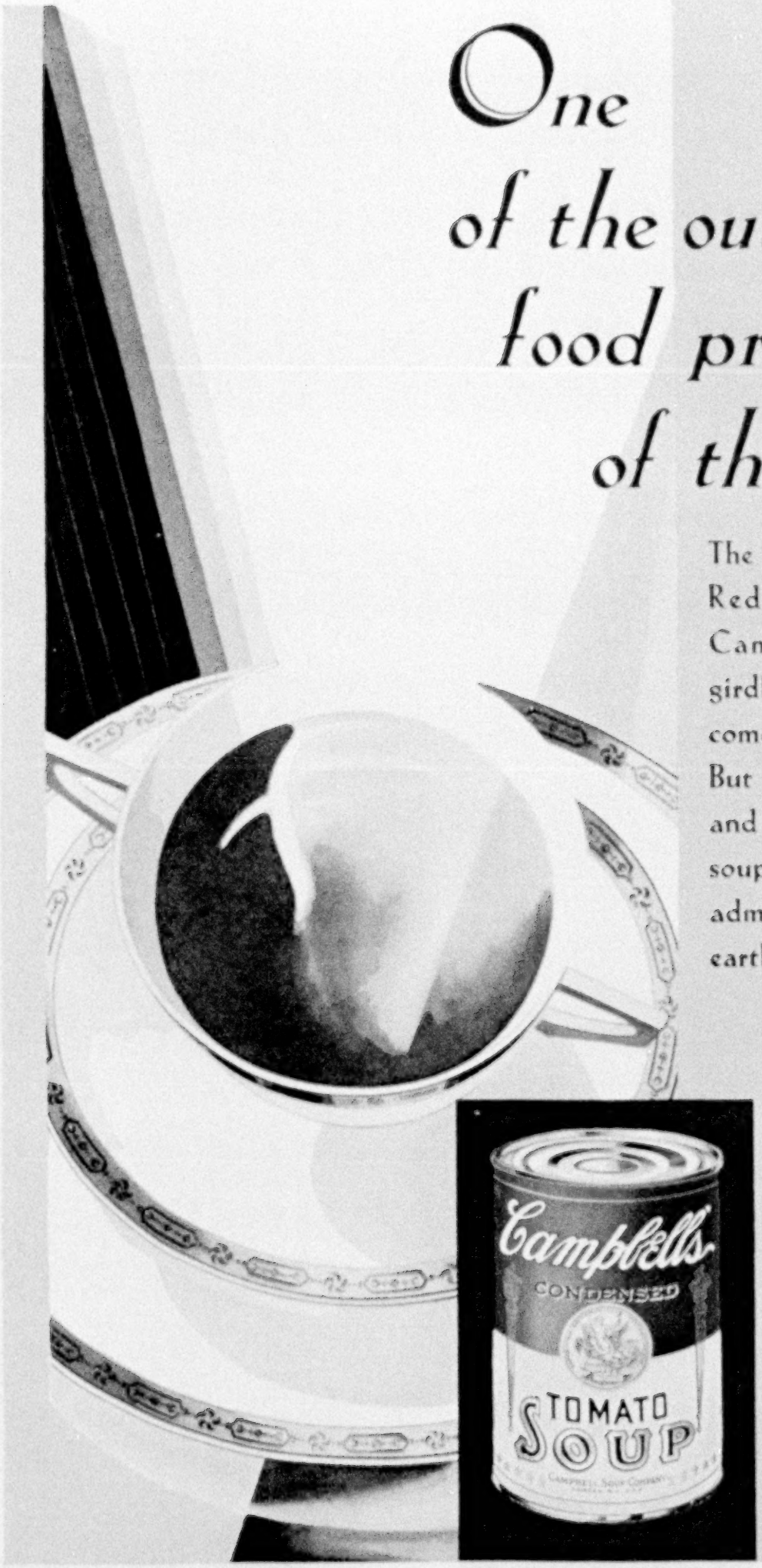
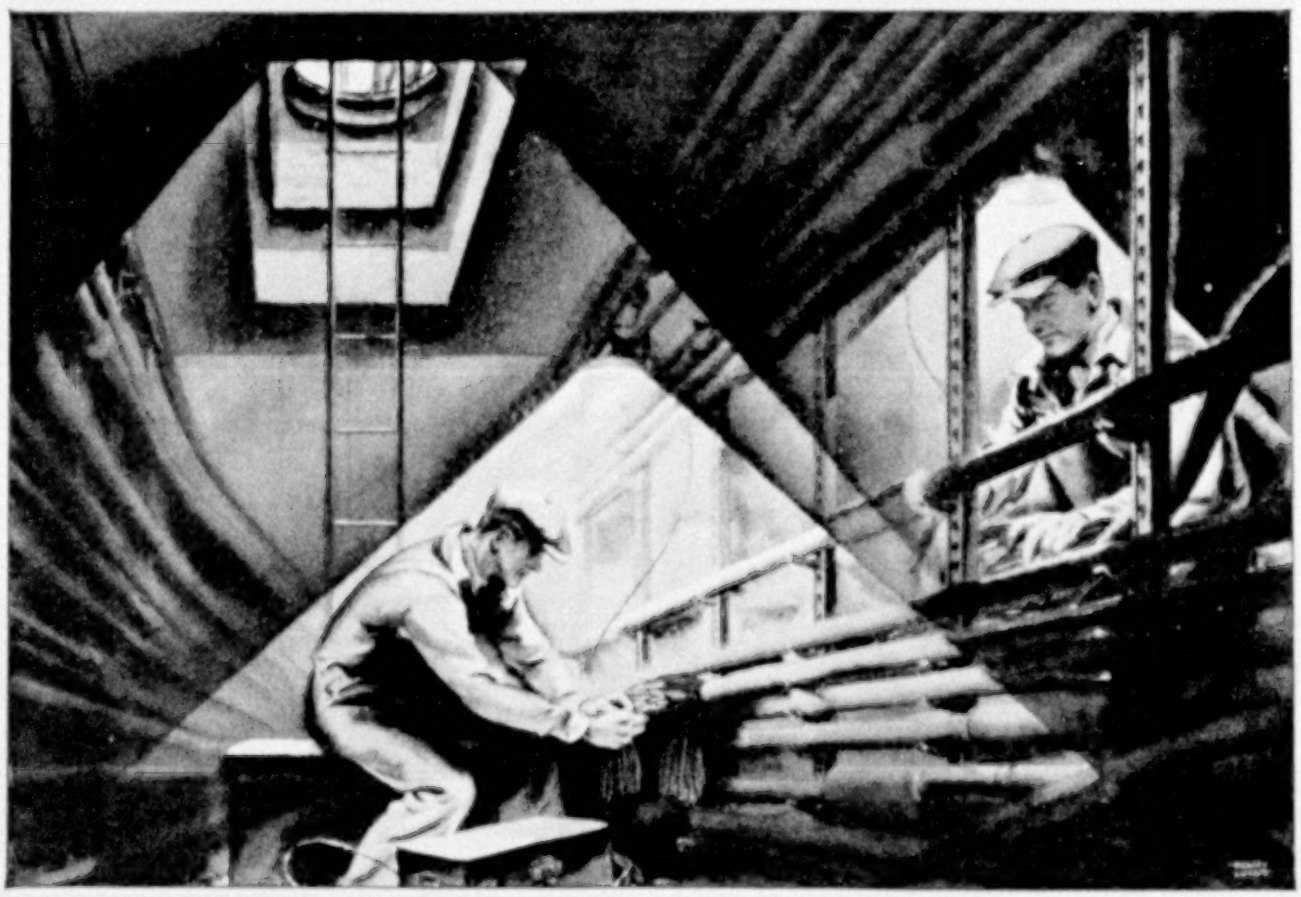
LOOK FOR THE RED-AND-WHITE LABEL



MEAL-PLANNING IS EASIER WITH DAILY CHOICES FROM CAMPBELL'S 21 SOUPS



THE INCREASING USE OF THE TELEPHONE REQUIRES THE EXPENDITURE OF HUNDREDS OF MILLIONS ANNUALLY FOR EXTENSIONS AND IMPROVEMENTS

It keeps faith with your needs

An Advertisement of the American Telephone and Telegraph Company

You have found a constantly growing use for the telephone. You have learned its value in business. You have found it helpful in keeping contact with family and friends. Its increasing use has given the telephone its humanly important place in modern life and requires the expenditure of hundreds of millions annually for extensions and improvements.

In 1929 the Bell System's additions, betterments and replacements, with new manufacturing facilities, meant an expenditure of 633 million dollars. During 1930 this total will be more than 700 millions.

Definite improvements in your service result from a program of this size and kind. They start with the average time required to put in your telephone—which in five years has been cut nearly in half. They range through the other branches of your service, even to calls for distant points—so that all but a very few of them are now completed while you remain at the telephone.

In order to give the most effective, as well as the most economical service, the operation of the Bell System is carried on by 24 Associated Companies, each attuned to the part of the country it serves.

The Bell Laboratories are constantly engaged in telephone research. The Western Electric Company is manufacturing the precision equipment needed by the System. The staff of the American Telephone and Telegraph Company is developing better methods for the use of the operating companies. It is the aim of the Bell System continually to furnish a better telephone service for the nation.

BELL SYSTEM

Investment Advice

Advice is a term often used and often misunderstood. Analysis, rather than advice, should be the first step in any investment decision. Every investor, before purchasing any type of securities, should analyze thoroughly his own financial position.

Then when his own individual problems are clearly defined and understood, a competent investment organization should be consulted.

The National City Company, with its international buying and distributing organization, is well qualified to act in such consultant capacity. In its list of offerings will be found high grade securities of widely different classifications. From them, with the help of a National City man, investments that conform to individual needs may be selected.

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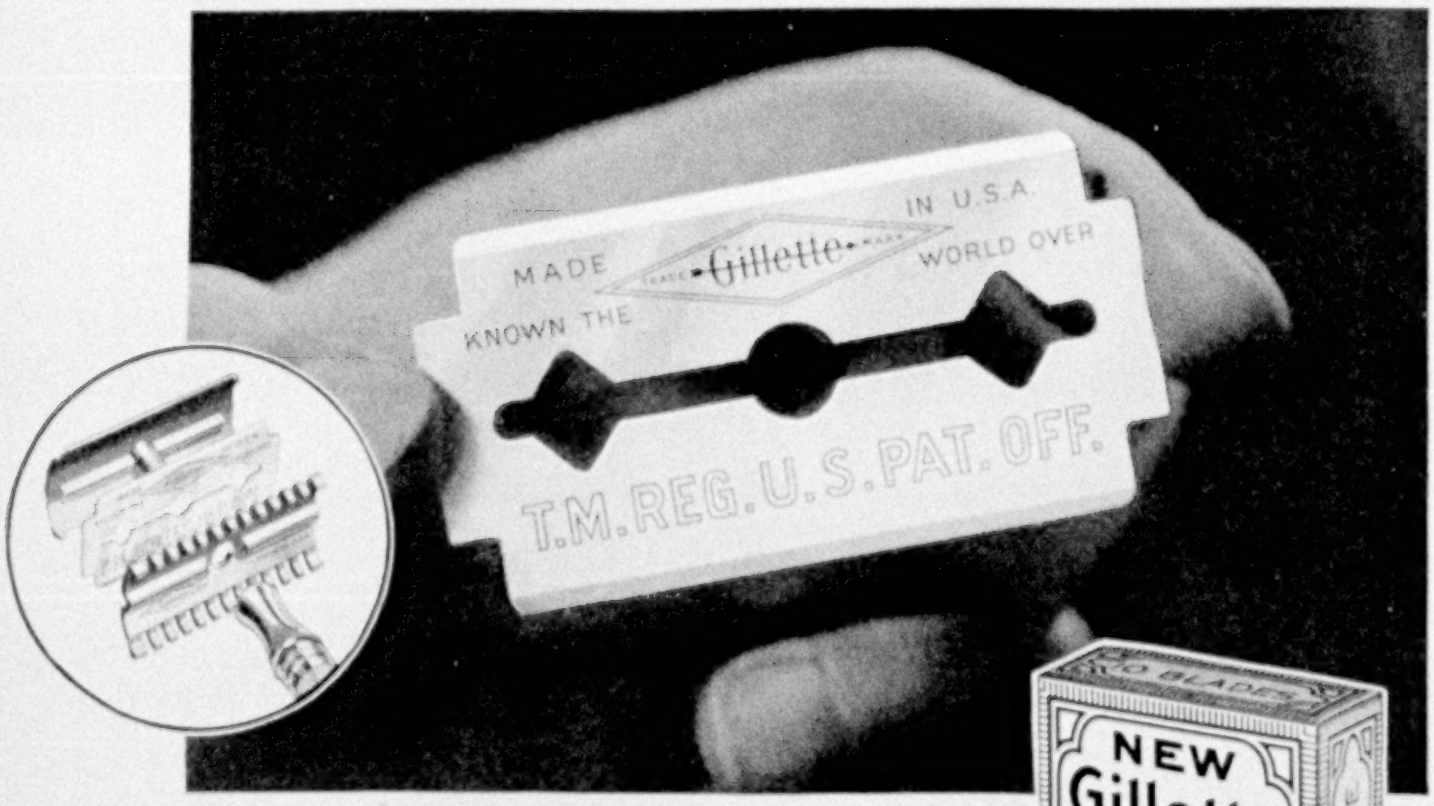
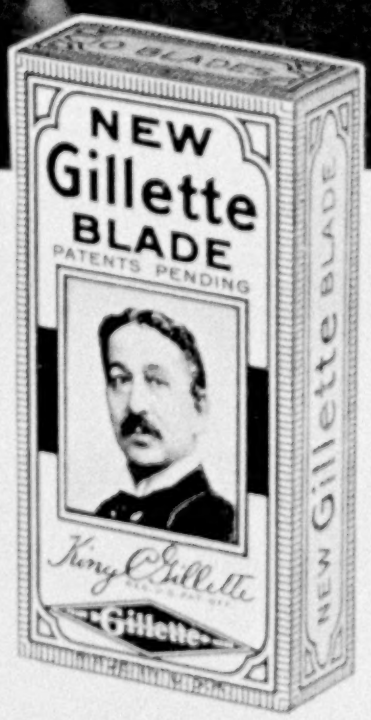
SQUARE blade-ends





Easier and safer to handle

MOST MEN like fishing—but not fishing down the drain-pipe for a slippery razor blade. That's one of many reasons why a vast army of men are praising the New Gillette Blade. Its square ends can't slip out of soapy fingers; and how easily the new blade reaches into the tight little corners around the mouth, nose and ears!

There are so many other big improvements that you won't appreciate them all until you try this New Gillette Shave yourself. Here are just a few: no more wiping or drying of parts. New blade resists rust. "Razor pull" is banished forever by new reinforced corners of razor cap and cut-out corners of blade.

Sounds almost impossible to give you all this remarkable new shaving comfort for only one dollar, doesn't it? Yet your dealer has your New Gillette Razor set waiting for you—your choice, in fact, of five styles of handsome cases. Additional new blades are priced at one dollar for ten and fifty cents for five.

Enjoy this new shaving thrill tomorrow morning by seeing your dealer on your way home tonight.

GILLETTE SAFETY RAZOR CO., BOSTON, U.S.A.

$1.00 *for ten; 50c for five.*
The New Gillette Blades in the new green packet

Gillette

The New Gillette Shave

DODGE BROTHERS

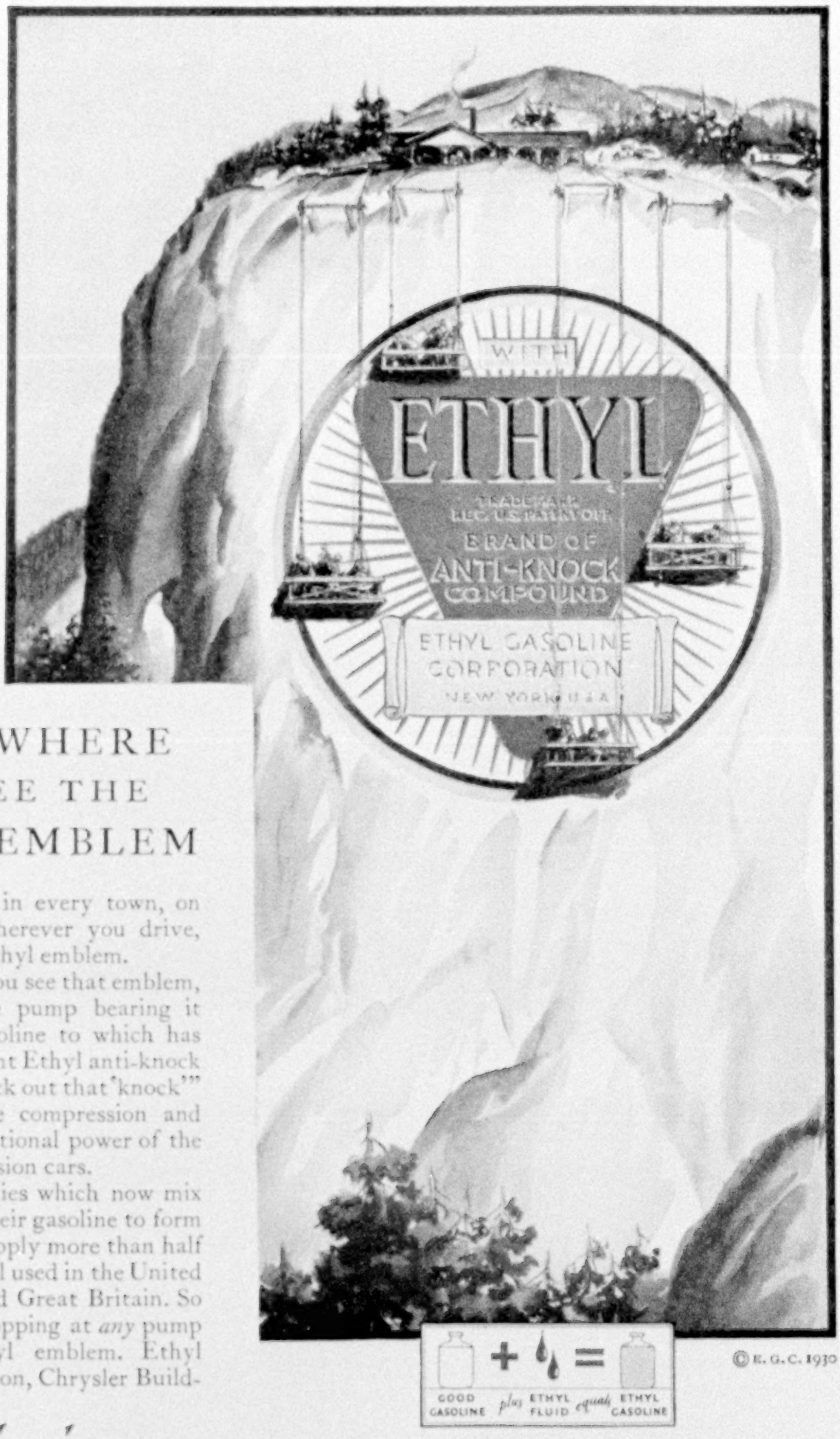
SIXES AND EIGHTS

UPHOLDING EVERY TRADITION OF DODGE DEPENDABILITY

You can own a Dodge Six today at the lowest price in Dodge Brothers history. A Dodge Six of typical Dodge Brothers dependability and economy. With strong, safe, silent Mono-Piece Steel Body and weatherproof 4-wheel hydraulic brakes. With vigorous, smooth performance. With smart style and beauty. With exceptional roominess and comfort. A car that has everything you want most in a motor car at a price almost everybody can afford to pay. Your local dealer will gladly show you the Dodge Six and its notable companion, the Dodge Eight-in-Line.

DODGE SIX
$835
AND UP, F. O. B. FACTORY

© 1930 by Dodge Brothers Corporation



EVERYWHERE YOU SEE THE ETHYL EMBLEM

IN every state, in every town, on every road, wherever you drive, you now see the Ethyl emblem.

And wherever you see that emblem, it means that the pump bearing it contains good gasoline to which has been added sufficient Ethyl anti-knock compound to "knock out that 'knock'" in cars of average compression and bring out the additional power of the new, high-compression cars.

The oil companies which now mix Ethyl fluid with their gasoline to form Ethyl Gasoline supply more than half of all the motor fuel used in the United States, Canada and Great Britain. So you are safe in stopping at *any* pump bearing the Ethyl emblem. Ethyl Gasoline Corporation, Chrysler Building, New York.

* * *

Fill up with Ethyl; take the worst hill, the worst road or the worst traffic congestion you can find. Your car will prove the difference Ethyl makes.

© E. G. C. 1930

The active ingredient used in Ethyl fluid is lead · Knocks out that "knock"

ETHYL GASOLINE

· C A N A D I A N V A C A T I O N ·

In Settings *Unchanged since* Yesterday

IT IS NOT long since the jack-boots of the French cavaliers trod the mossy banks of the St. Lawrence, Fleur-de-lis flew from the bastions of Quebec, and Wolfe met Montcalm on the Plains of Abraham. Time has not greatly changed the lower reaches of Canada's historic river.

The oldest mountains in the world, first to emerge from the silence of the ice ages, lie warm beneath their blankets of pine.

Quaint villages dot the shores and nestle in folds of the hills. The French tongue prevails. The habitants weave and spin, sow and reap as did their ancestors who crossed the ocean in square-rigged cockle-shells.

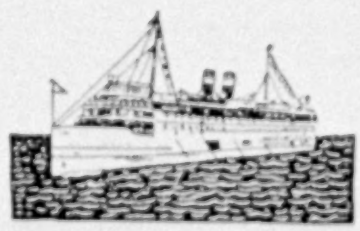
You may sail their paths on the same blue waters in the modern steamers of our white fleet, with every luxury, entertainment and pleasure of good living.

Please write at once for illustrated folder, which describes in detail the pleasures of this wonderful vacation cruise.

VERY IMPORTANT

CANADA STEAMSHIP LINES operate from the head of Lake Superior, via the St. Lawrence River, to the Saguenay. Their cruises include the seven-day trip from Detroit to Duluth and return; Niagara to the Saguenay, including the Thousand Islands, and shooting the rapids; excursions from Toronto, the Queen City, to Niagara, the Thousand Islands and Rochester. They operate a fleet of 106 steamers, freight and passenger, and are the largest fresh-water transportation company in the world. The famous Saguenay trip includes visits to Montreal, metropolis of Canada; Quebec, the historic walled city; Murray Bay, "Newport of the North," and Tadoussac, Canada's oldest settlement. The Saguenay Canyon is one of nature's masterpieces.

Our steamers may be boarded at Lewiston, Rochester, Duluth or Detroit in the U. S. A., or Sarnia, Queenston, Toronto, Montreal or Quebec in Canada.



For full information, rates and reservations, apply

CANADA STEAMSHIP LINES

715 VICTORIA SQUARE, MONTREAL, CANADA

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Agents in all the Principal Cities of the United States and Canada . . . or your own Tourist Agent

CANADIAN NATIONAL—TO EVERYWHERE IN CANADA

The Highlands of ONTARIO

JUST over night from peopled places lies this cool forest playground . . . with silver lakes, shady by-paths, fragrant air and sport for all.

Hundreds of welcoming havens . . . at Muskoka, Kawartha, Lake of Bays, the 30,000 Islands of Georgian Bay or the beautiful shores of blue Lake Huron . . . offer infinite variety in summer-time pleasures.

Golf and tennis, fishing, swimming and canoeing in an ideal breeze-swept environment.

Or . . . paddle and camp in the solitudes of Algonquin Park, Timagami or Nipigon Forest Reserves where silence reigns and game fish leap.

Reasonable rates and comfortable accommodations for summer guests.

Full information from any Canadian National Office

BOSTON 186 Tremont St.	KANSAS CITY 705 Walnut St.	PORTLAND, ME. Grand Trunk Ry. Sta.
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CHICAGO 4 So. Michigan Ave.	MINNEAPOLIS 518 Second Ave. So.	ST. LOUIS 314 No. Broadway
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CLEVELAND 925 Euclid Ave.	PHILADELPHIA 1422 Chestnut St.	SAN FRANCISCO 689 Market St.
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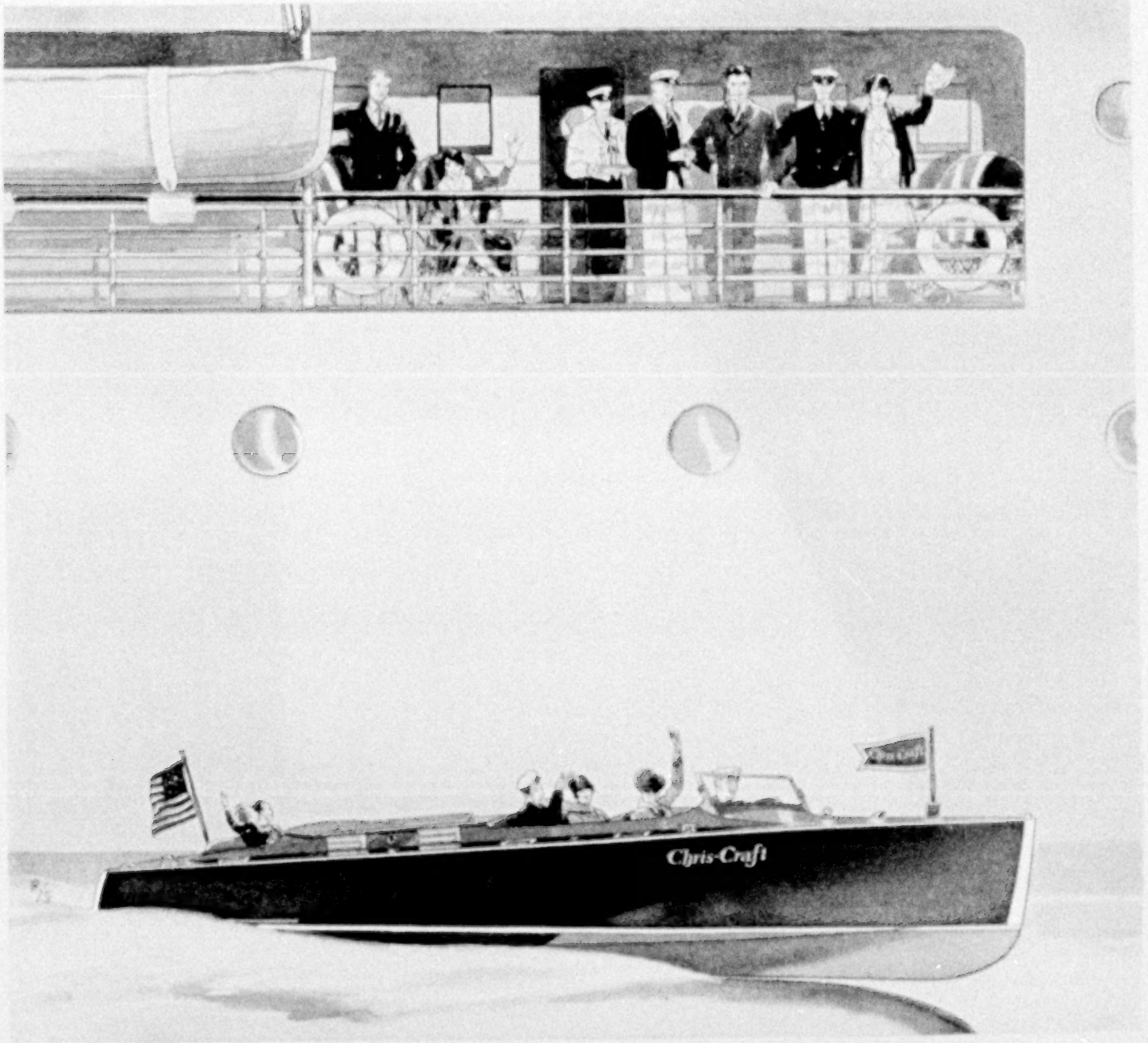
Radio is an attractive feature on Canadian National de luxe trains.

Canadian National was the first railway in the world to provide this facility.

CANADIAN NATIONAL

The Largest Railway System in America



Chris-Craft 26-ft. Runabout, 250 H. P. Chris-Craft Marine Motor, speed up to 45 M. P. H., $4750

ROUGHING it has gone out of fashion. Chris-Craft will take you in arm chair comfort at express train speed right into the heart of nature. Enjoyment of the wilderness is no longer confined to those who can carry a pack over rough trails or row a hard seated boat. Even an invalid can go fishing. Seated upon deep, luxurious cushions one may fish or ride by the hour without fatigue. ' ' ' One may explore a hundred miles of coast-line —go swimming—attend an afternoon tea and be ready for the dinner dance—all in the space of an afternoon—and best of all, without fatigue or discomfort. ' ' ' Better to have a Chris-Craft without a summer home than a summer home without a Chris-Craft. All the family will gain health and pleasure from Chris-Crafting, for it provides always something to do and the means to do it with. From nimble seventeen-footer to the luxurious Chris-Craft yacht is a wide range of fine watercraft to suit all needs and tastes. Illustrated catalog may be had from Chris Smith & Sons Boat Company, 766 Detroit Road, Algonac, Michigan.

NEW!

A 17-foot Runabout, 25 M. P. H., priced at $1295.

Chris-Craft

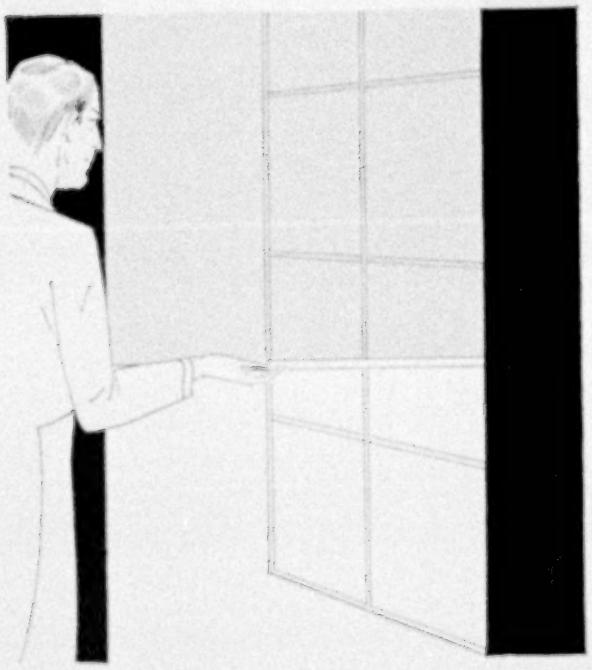
World's Largest Builders of Mahogany Motor Boats

Runabouts—Sedans—Commuters—Cruisers—Yachts
25 Models—17 to 48 feet—$1295 to $55,000

A FEW DESIRABLE SALES TERRITORIES OPEN. WIRE FOR DETAILS.

Rolscreens
TRADE MARK

The finest window screens
« « « « you can buy



Modern refinement has found its way in to window screens. Rolscreens become an inconspicuous part of the windows, scarcely noticeable, yet efficient in service, durable and mechanically exact.

Rolscreens, all metal construction, are built in the windows. They roll up and down. Up, they are out of sight and protected. What a saving in storage space, seasonal labor and expense! Rolscreens may be rolled away whenever the windows are closed.

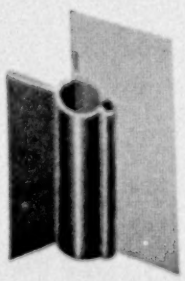
It required Rolscreen mechanical genius to make rolling window screens practical. The patented features and the handsome electroplated "AluminA" (double life) wire combine to make the outstanding screens of the age.

To help you identify these finer rolling window screens look for the trade mark, *Rolscreens*

Replacing window screens—building or remodeling—you will want to look over the

Illustrated Rolscreen Booklet mailed upon request.

ROLSCREEN COMPANY
421 Main Street Pella, Iowa



Fifteen Patented Features of Rolscreens are essential to practical rolling window screens.

A SECTION through guide showing lug in selvedge of screen wire which prevents sagging. A "non-sagging" feature found only in Rolscreens.
FULLY GUARANTEED

Shrines of Englands History.

Begin with Exeter, with its white stones drenched in peace and its exquisite carvings looking like a thousand petrified ripples. Glastonbury Abbey lifts its broken arch above the grass in perpetual supplication. Beaulieu, founded by King John, standing like a white spectre in the fields. Exquisitely feminine Wells, a gothic sermon in stone. Winchester, where Edward the Confessor was hailed as king. Canterbury and its priceless relics of early Christianity, the tomb of the Black Prince, the shrine of Thomas a Beckett, and the very stone on which Henry II knelt in penance. Perfectly proportioned Salisbury. Tewkesbury Abbey, named the melancholy, and tragic Tintern, kneeling in a meadow of daisies like a saint at prayer, is an unforgettable sight.

There are many more of these glorious shrines—Chester, Hereford, Gloucester, and Worcester, each a gem of loveliness and interest that will lend fragrance to days ever afterward.

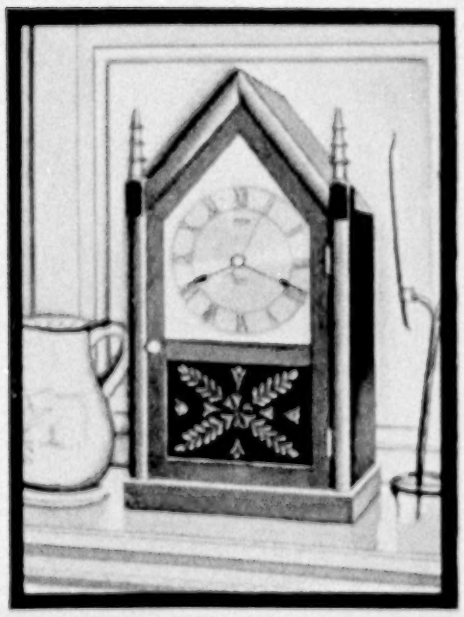
Write for the new Guide No. 51 which will be gladly mailed free

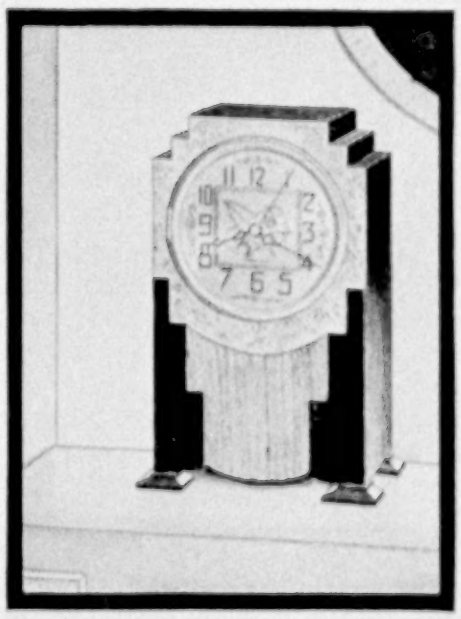
G. E. ORTON, *Gen. Agent*, 505 Fifth Avenue, N. Y.

Great Western and Southern Railways of England.

Distinguished chiming clocks that bring you the accuracy of Telechron electric time

THERE'S PLEASURE in the possession of fine cabinetwork . . . delight in the music of mellow chimes . . . and efficiency in the assurance of accurate time. Revere offers you all three, in a series of distinguished clocks equipped with Telechron motors. • Revere Clocks are designed by artists —wrought of rich woods by craftsmen. They may be had with Westminster, Canterbury or Whittington chimes — or with a ship's bell strike. In every one is a tiny, self-starting Telechron motor which takes alternating current from the electric outlet and translates it into time you can trust. The worry of winding and regulating is ended. Life moves on schedule and much more serenely! • Three of the many Revere models are illustrated here. At the right is Plymouth, a Colonial design in Honduras mahogany. 69″ high, with Westminster chimes, it is priced at $125. Below, at left, is R-632, of the same period, in the same wood. It stands 18″ high and sells for $68 with Westminster chimes. Below, right, is R-628, a novel modern design in walnut, bird's-eye maple, ebony and zebra wood. It is 12½″ high and priced, with Westminster chimes, at $66. • Write for our free booklet, "Observatory Time," which illustrates these clocks and many more, ranging in price from $40 to $1200.* *The Revere Clock Company, 416 McMillan Street, Cincinnati, Ohio.*





** The Warren Telechron Company, of Ashland, Mass., manufactures a full line of non-striking clocks at prices up to $55.*

Revere Clocks

with Telechron electric motors

Sleep is precious . . . so is coffee

Have you missed coffee at your evening meal? Now you can bring back that lost zest with the most delicious coffee you ever tasted. And you can have the comfortable certainty of restful sleep and steady nerves.

Kaffee Hag Coffee is *real coffee* of the finest blend, with 97% of the caffeine removed. It is the coffee that lets you sleep—the original caffeine-free coffee with an improved flavor.

No longer need you drink unsatisfying substitutes. Try Kaffee Hag Coffee *tonight*. Make it just as you would any other coffee. Drink it, black and fragrant, or mellow with cream.

Let us send you a sample. Mail the coupon. Or buy a vacuum-sealed can at your grocer's. The price is now materially reduced.

Kellogg's KAFFEE HAG COFFEE

KELLOGG COMPANY, Dept. R-6, Battle Creek, Michigan

Please send me, postpaid, enough Kaffee Hag Coffee to make ten good cups. I enclose ten cents (stamps or coin). (*Offer good in U. S. A. only.*)

*Name*_____

*Address*_____

IT'S A BOHN PORCELAIN EXTERIOR

FOR many years Bohn has been making refrigerators, not merely to provide a receptacle for ice and eatables; rather to create a sanitary refuge to which a housewife would commit the rarest of her handiwork, with confidence that it would retain all its daintiness when served hours later to her guests. Nothing would do for this finest of scientific refrigerators but white porcelain enamel. Bohn porcelain is as sheer and pure in its beauty as the marble of Paros.

The cover of a book or the case of a watch is not as important as its contents, but the public very properly demands that the case match the quality within.

With this in mind, Bohn refrigerators have never varied in quality,—except when changes have been made for the better. Every buyer of a Bohn Porcelain Refrigerator can have the utmost confidence in its lasting qualities; they can know that it will not become unsightly or shabby, even with years of use, but will remain pure and unsullied for all time.

Bohn *is the world's largest manufacturer of all-porcelain refrigerators.*

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA
Chicago New York

BOHN *SYPHON REFRIGERATOR*

MY EFFORTS WERE ALL IN VAIN

"My lovely things were laid away tenderly in the chest upstairs. The other day, I went to get an extra blanket. At first I couldn't believe what I saw...then, I had to. All my efforts to protect delicate silks and woolens had been in vain . . . my most precious things were riddled with moth holes!"

In exactly this way millions of dollars worth of clothing and household effects are needlessly destroyed each year by moths. The odors of cedar, moth balls, camphor and the other "repellents" are now found by the United States Government* to be almost worthless when used under ordinary conditions. For example moth-proofing solutions are not mentioned in Government Bulletin No. 1353 which fully describes approved methods of preventing moth damage.

It is no longer necessary to entrust valuable clothing, blankets, etc., to the inefficient and futile methods of the so-called moth-proofing solutions and moth preventatives. The Plymetl Vault offers complete protection by a Government approved process. It employs a truly effective method of destroying all moth life . . . a method completely dependable and yet extremely simple. Because of this fact, the Plymetl Vault is far superior to cold storage. Refrigeration merely stupefies the moths; a few hours in a warm closet renders them just as destructive as ever . . . the Plymetl Vault kills all moth life without the slightest injury to the most delicate fabrics.

*"For many years these materials have been called 'moth repellents' and it was believed their odor would keep moths from entering a closet or drive them out if they were already there, but we now know that such is not the case" says Mr. Abbott, Government Expert.

■ ■ ■ ■

■ ■ ■ ■

In addition to being an absolute safeguard against moths, the Plymetl Vault keeps dirt and dust from your clothing—cleaning bills are reduced to a minimum. It is also practically burglar-proof—its steel walls and multiple tumbler lock are beyond the skill of the household thief.

Because of its fireproof construction the Vault is frequently built in as a permanent and distinctive feature of modern apartments and homes. A floor space only two feet square allotted to the Vault provides a convenience of recognized worth.

A Plymetl Vault is an excellent investment in clothing protection — the money you will save by fully safeguarding your clothes will buy you the permanent protection of this personal clothes vault.

Let us send you further particulars —fill out the coupon for complete descriptive literature and prices.

Progressive distributors and dealers are invited to send for particulars of our interesting sales plan.

Haskelite Manufacturing Corporation, 120 S. La Salle St., Chicago, Ill.

I am interested in learning more about Plymetl Clothes Vaults. Please send complete information. I will not be obligated and I understand representative will not call unless requested.

Name .....

Street .....

City ..... State NG-6

Buying embroidered silks in China
(Photo taken on first Malolo cruise)

Around Pacific Cruise

Your most unusual tour
. . . to Orient and Indies
on the great MALOLO

Always they call insistently to you who love romance, beauty, adventure—these strange lands on the second Around Pacific Cruise of the luxurious Malolo.

How different this trip from travel along the beaten path of tourists! Think of shopping for silks and jade and beaten gold in the ancient cities of Japan and China and the Philippines, Siam and Malaya!

Think of meeting Spring in the "Isles of Spice"—the orchid lands of Java and Celebes! Then on to sunny Australia and New Zealand, exotic Fiji and Samoa, and Hawaii, always glorious!

There's no other trip like this! The 23,000-ton Malolo, speed queen of the Pacific, sails September 20 from San Francisco to 19 ports in 12 countries bordering the Pacific. You return December 19—and what Christmas surprises you bring back!

Membership is limited. Fares, $1,500 to $6,500, cover everything—including shore trips! Ask today for information at Matson Line or American Express Company, joint managers of this exceptional cruise, or your travel agency.

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AMERICAN EXPRESS CO.
in cooperation

Matson Offices Address Dept. 602

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LOS ANGELES, 723 W. 7th St.
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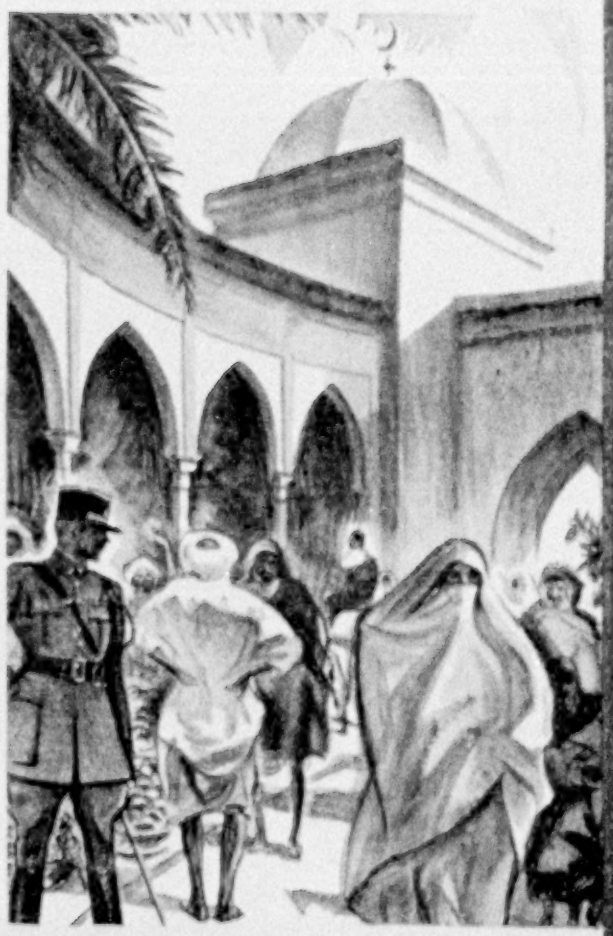
Next Winter... RELAX *under the sun of ages*

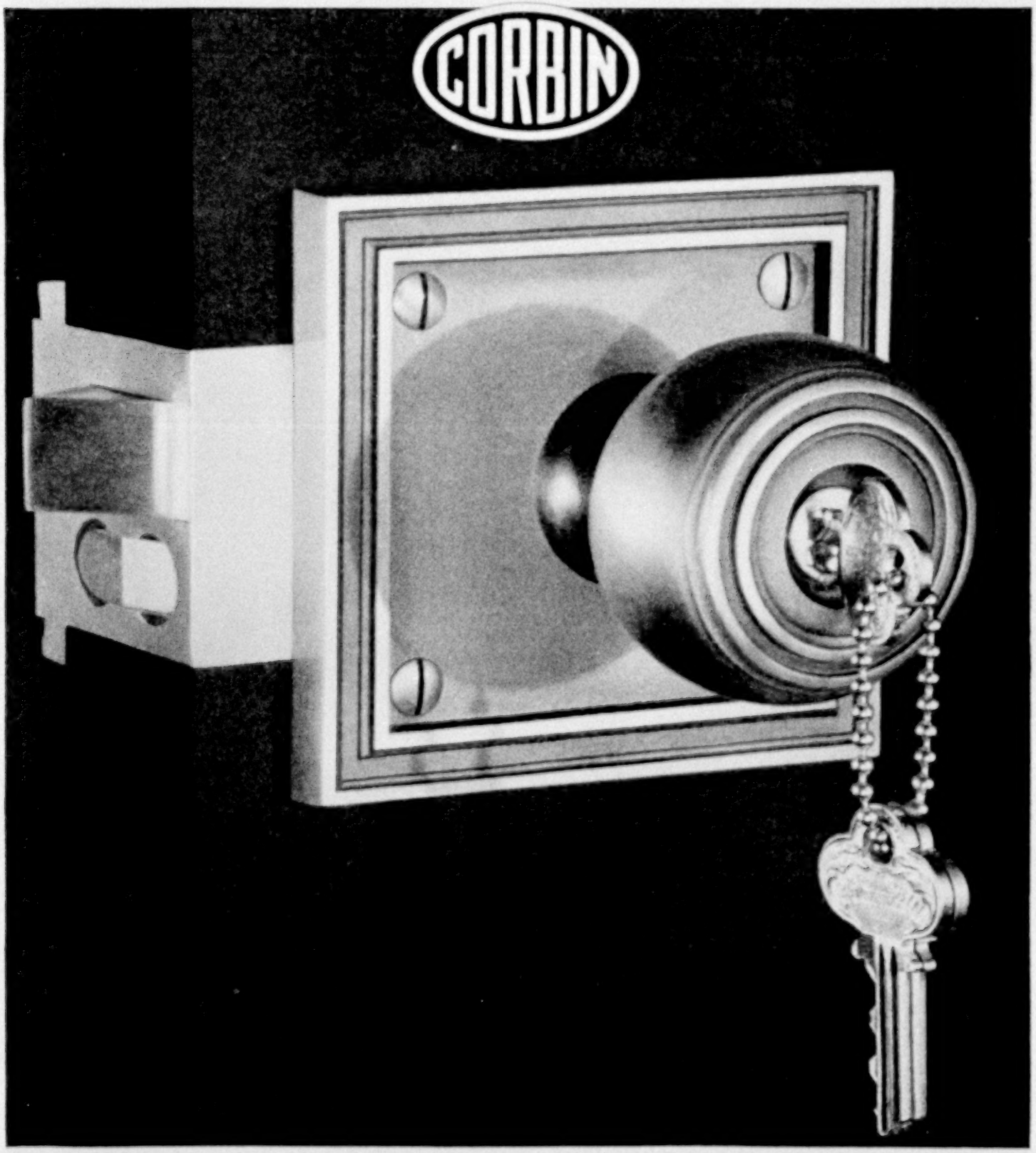
● Make next winter a sun-lit summer in the Mediterranean. See new faces... Arab, Moor, Egyptian . . . 3,000-year-old customs. Go on the yacht-like Empress of France. Enjoy service and cuisine on the New York-Paris scale. Hers is the Mediterranean cruise with a "5th Acc"... the entrée of the world's greatest travel system. Eighth season. Booklets, ship plans, from your own agent or any Canadian Pacific office: New York, Philadelphia, Boston, Chicago, Montreal, and 30 other
● cities in United States and Canada.



WORLD'S GREATEST TRAVEL SYSTEM
Canadian Pacific

No Corbin Unit Lock has ever worn out.

GOOD BUILDINGS DESERVE GOOD HARDWARE



P. & F. CORBIN SINCE 1849 NEW BRITAIN, CONN., U. S. A.

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CABIN and TOURIST CABIN
Now on the Pacific from SEATTLE and VICTORIA

This modern way to the Orient . . . by the shortest, cheapest route . . . in the new motorships HIKAWA MARU, HIYE MARU, and HEIAN MARU . . . and the remade SIBERIA MARU and KOREA MARU. Luxurious interiors, spacious cabins, a rich abundance of food, the courtesy of Japanese service, with English-speaking stewards, dances and entertainments.

FIRST CLASS FROM SAN FRANCISCO AND LOS ANGELES

There's another route: Fastest, newest in the San Francisco-Los Angeles-Orient run, three new supermotorships ASAMA MARU, CHICHIBU MARU, and TATSUTA MARU to Japan, China, and the Philippines, with stop-over at Honolulu.

Regular sailings from San Francisco and Los Angeles, $90 up. From Seattle and Victoria direct to the Orient, $195 up. ***Round-the-World in either direction with privilege of stop-over, $993 up, including rail fare. ***Around-the-Pacific Tours. Rates from $813.70 up.

For detailed information, sailing schedules and descriptive literature, write Dept. 9

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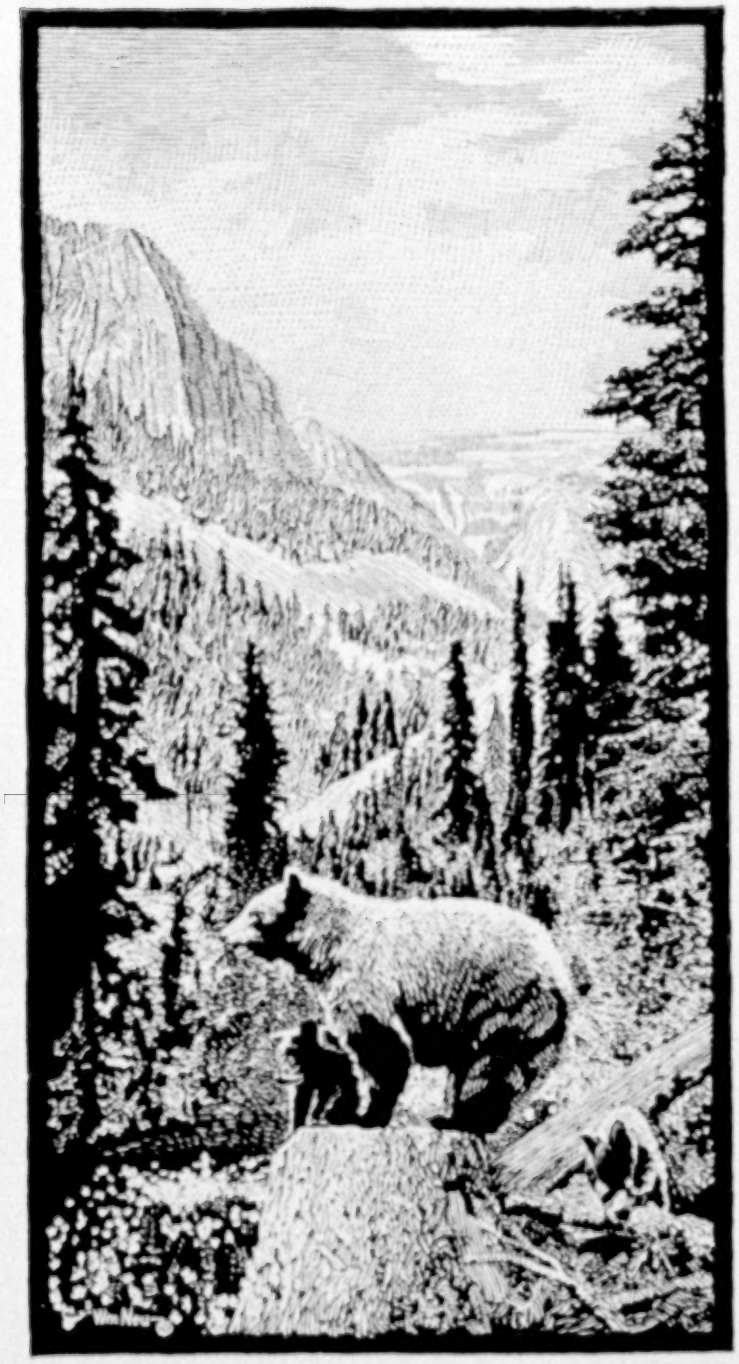
Our general agents or any local railroad or steamship agent

N·Y·K LINE



A Family Scene, Familiar in Geyserland

Go Union Pacific Direct to the Best In

Yellowstone

To West Yellowstone Gateway . . . the popular entrance to the heart of geyserland. "Old Faithful" . . . hot springs . . . paint pots . . . playful bears. From there through peaceful forest stretches to the magnificent Canyon. You see it all and see it right. Spend your whole vacation in this land of pleasure and health, or see it on a combination tour with Grand Teton, Rocky Mountain, Zion-Bryce-Grand Canyon National Parks, or as an easy side trip en route California or Pacific Northwest. Stopovers at Denver, Salt Lake City and Ogden at no additional rail fare.

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The Ideal Vacation Begins

Via Union Pacific

Every minute of your ride to vacationland is a pleasure via the cool Overland Route . . . smooth roadbed all the way . . . finest meals. You arrive in tip-top shape, gaining days to round out your stay. Union Pacific serves 15 National Parks and reaches more of the scenic West than any other railroad.

Low Fares all Summer

to California and Hawaii . . . Pacific Northwest and Alaska . . . Colorado . . . Rocky Mountain, Yellowstone-Grand Teton, Zion-Bryce-Grand Canyon National Parks. Summer rail fares are but little more than half the usual price.

Ask about escorted tours, with all expenses included in one price—the first cost the only cost.

For full particulars mail the coupon.

C. J. Collins, Gen. Pass'r Agent, Dept. 112
Union Pacific System, Omaha, Nebraska

Please send me complete information and booklets.

I am interested in a vacation trip to_____

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Name_____Street_____

City_____State_____

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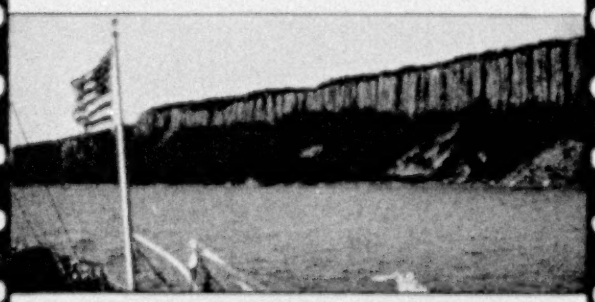
THE OVERLAND ROUTE

UNION PACIFIC

The 150 Mile
SUPER-SPECTACLE
between
NEW YORK *and* **ALBANY**

Through rail tickets, New York to Albany and Albany to New York accepted



EASY change from train to boat or boat to train at Albany, enabling you to fit the Day Line trip into any Summer itinerary. Seven palatial steamers. Restaurants. Orchestras. Service daily including Sunday.

ONE DAY OUTINGS *from* **New York**
Connections for **Catskills, Adirondacks, Berkshires and All Vacation Resorts**

Write for illustrated folder to

Day Line

Hudson River Day Line
West 42nd St. Pier, New York

HOW thrilling it is to learn about Washington, Henry, and Lee when you have stood on the very ground they trod, seen where they lived!

How easy it is to remember battles when you have seen where the charge was made, or where Cornwallis surrendered, or where Jackson "stood like a stone wall."

Above is shown one of the 900 markers that the State of Virginia has placed along its highways to mark such incidents in American history.

Teach American History to your children by a tour along the perfect highways of Virginia.

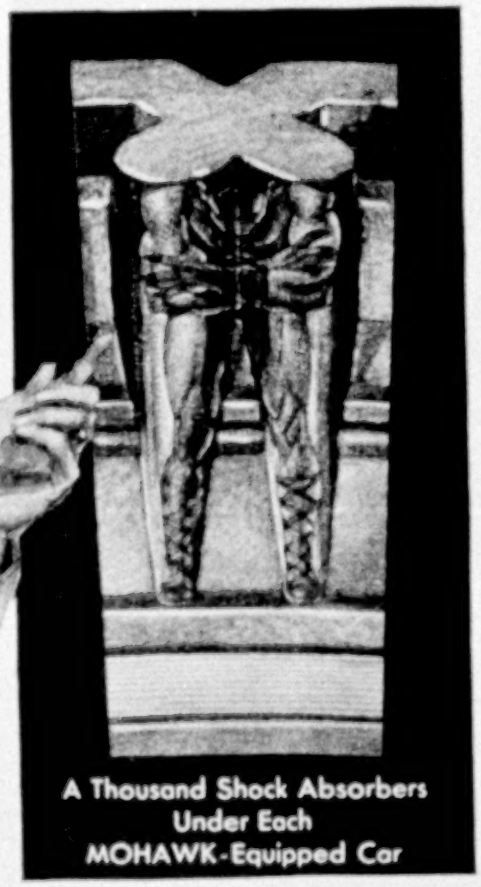
In addition to historic spots, you may visit mountains and beaches, unique natural wonders such as Natural Bridge and the Caverns of the Shenandoah Valley, or resorts offering every form of outdoor recreation.

A profusely illustrated booklet of 40 pages with maps has been prepared to help you plan your trip. This booklet, entitled "*Virginia, the Beckoning Land,*" will be sent you free. Address:

State Commission on
Conservation and Development
Room 150, State Office Building
Richmond : : **Virginia**

Write for this
FREE *booklet*

Virginia
"THE BECKONING LAND"



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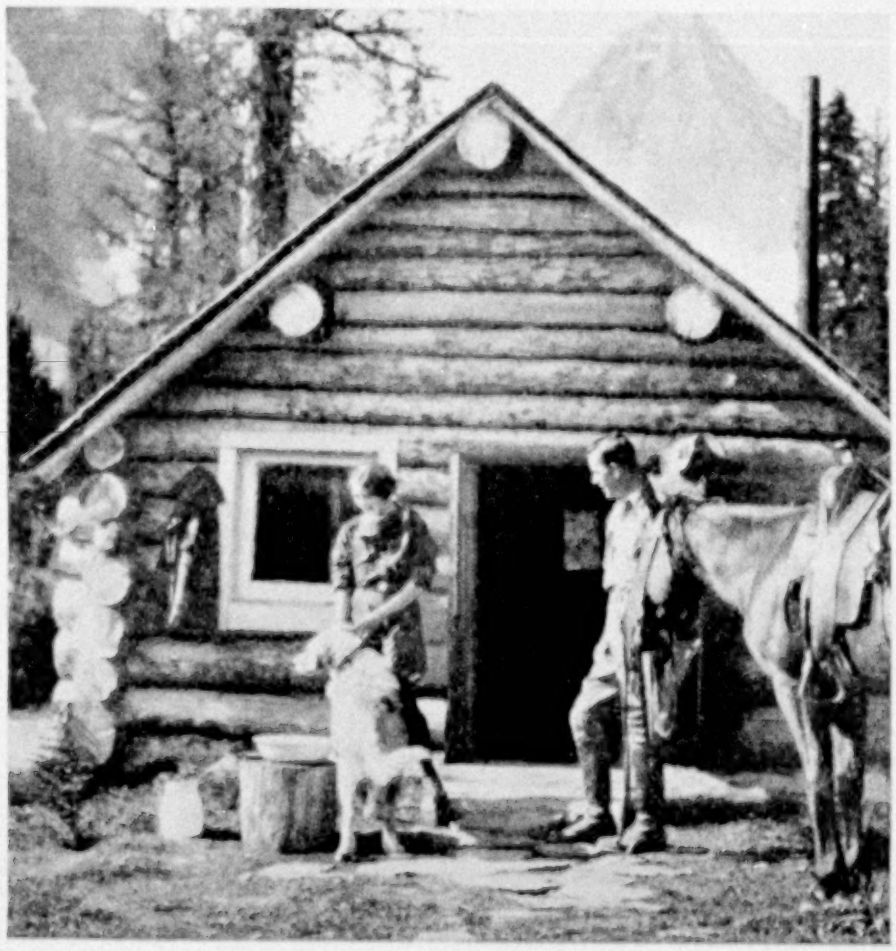

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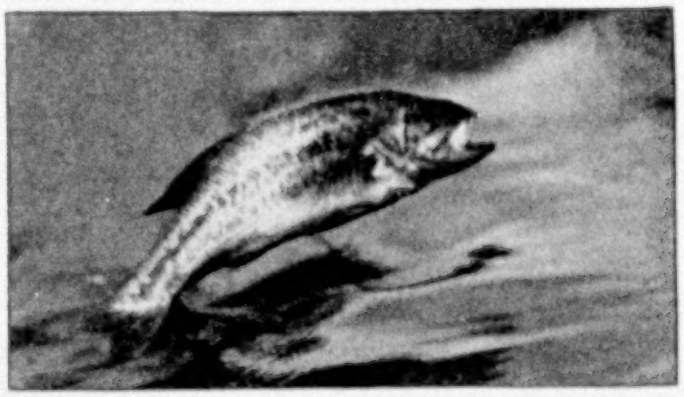

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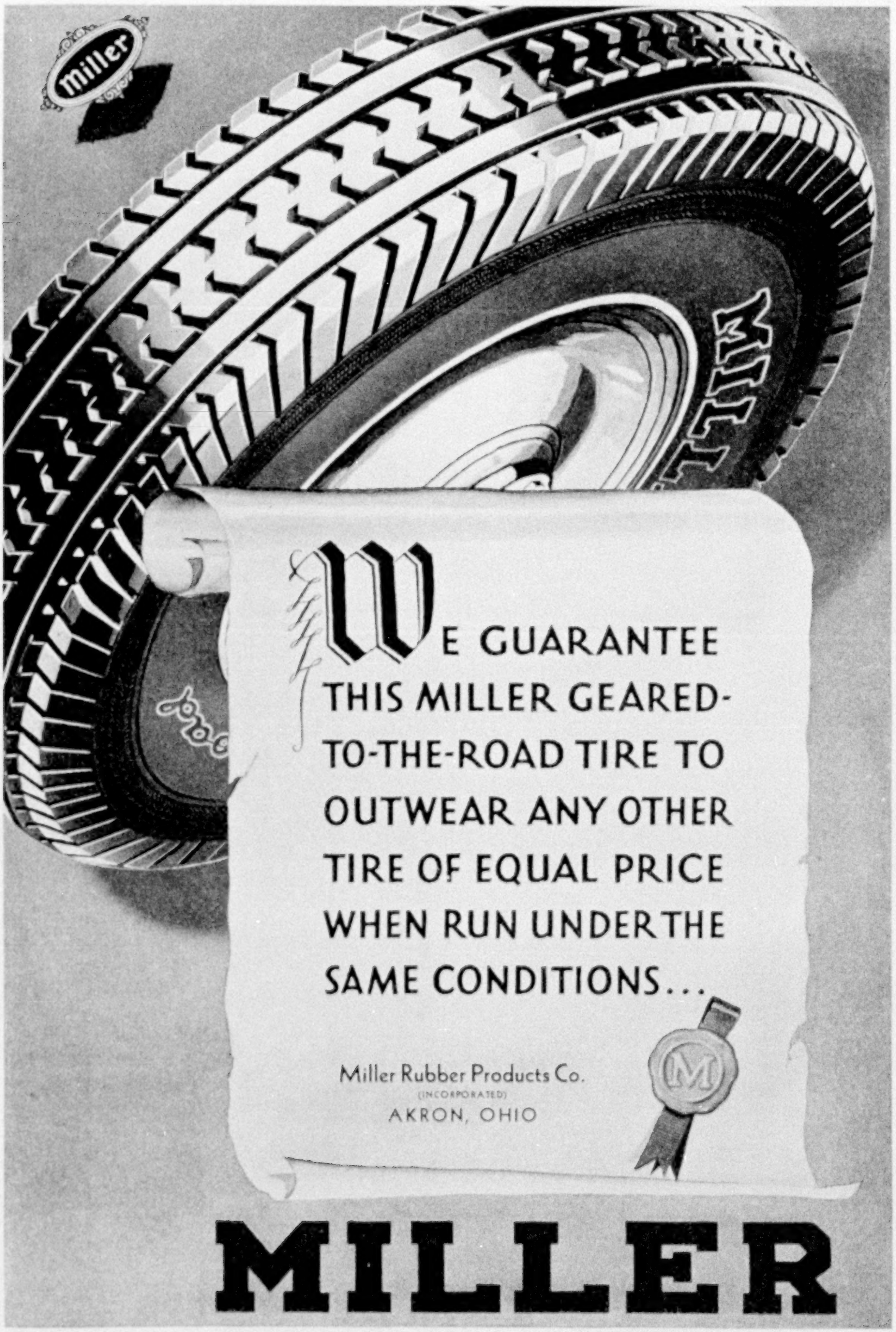

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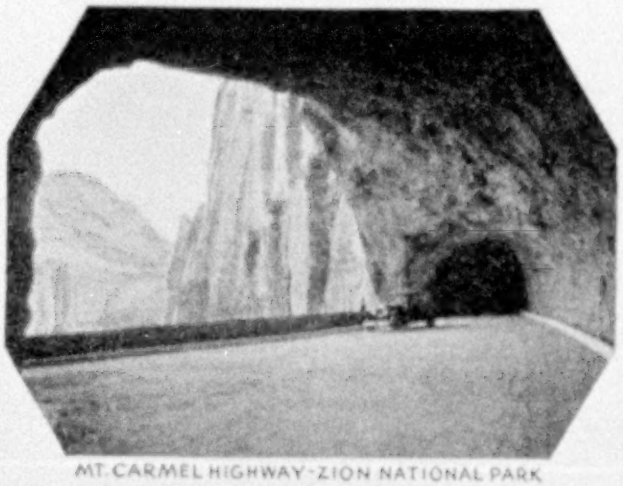

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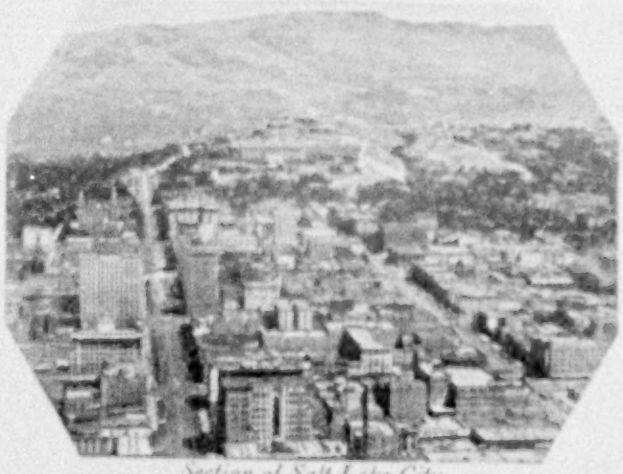

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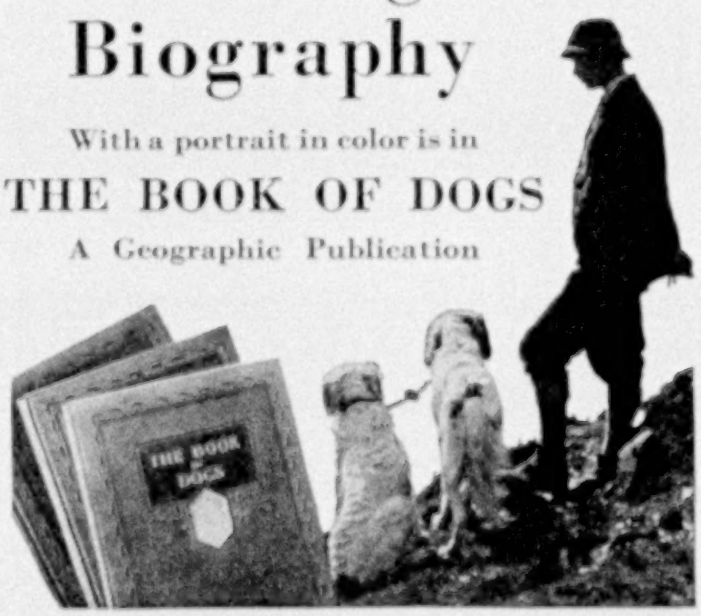

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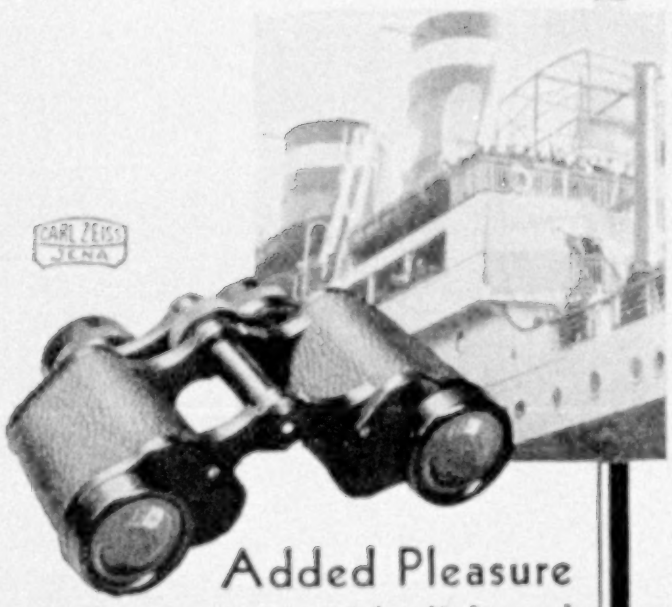

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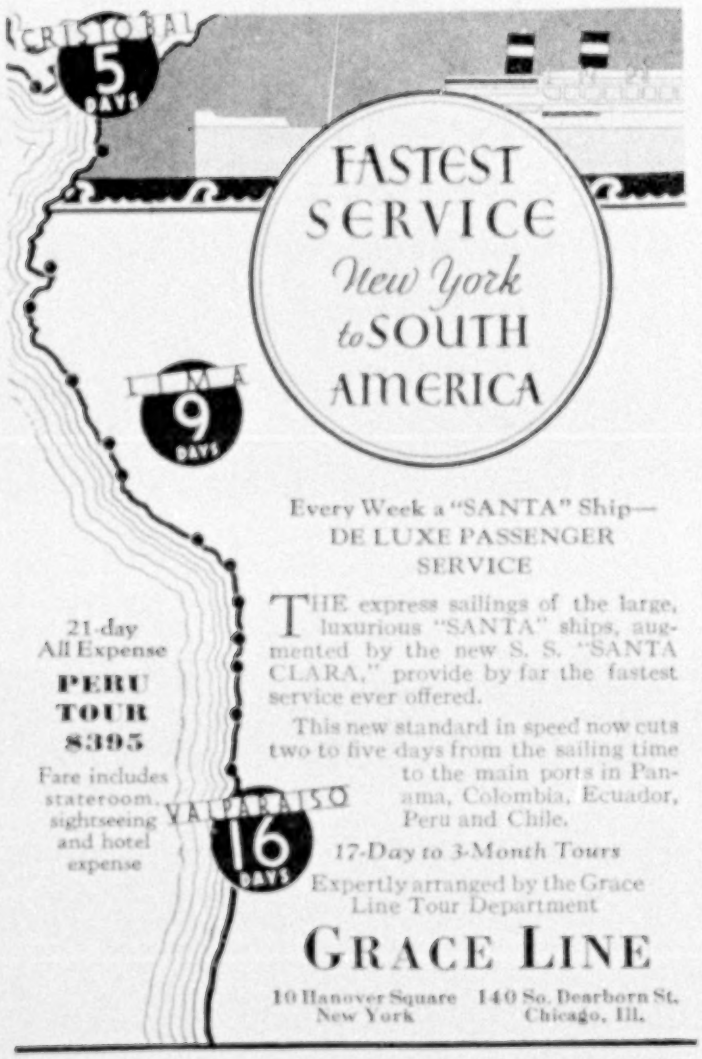

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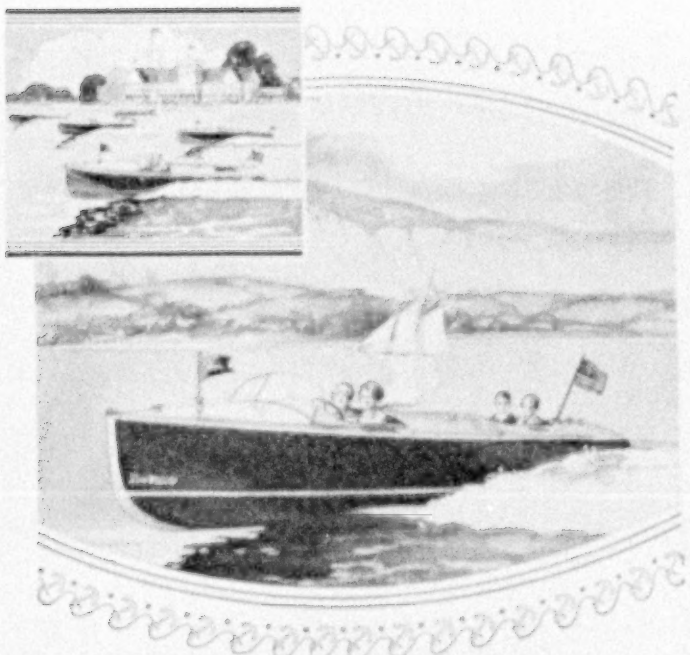

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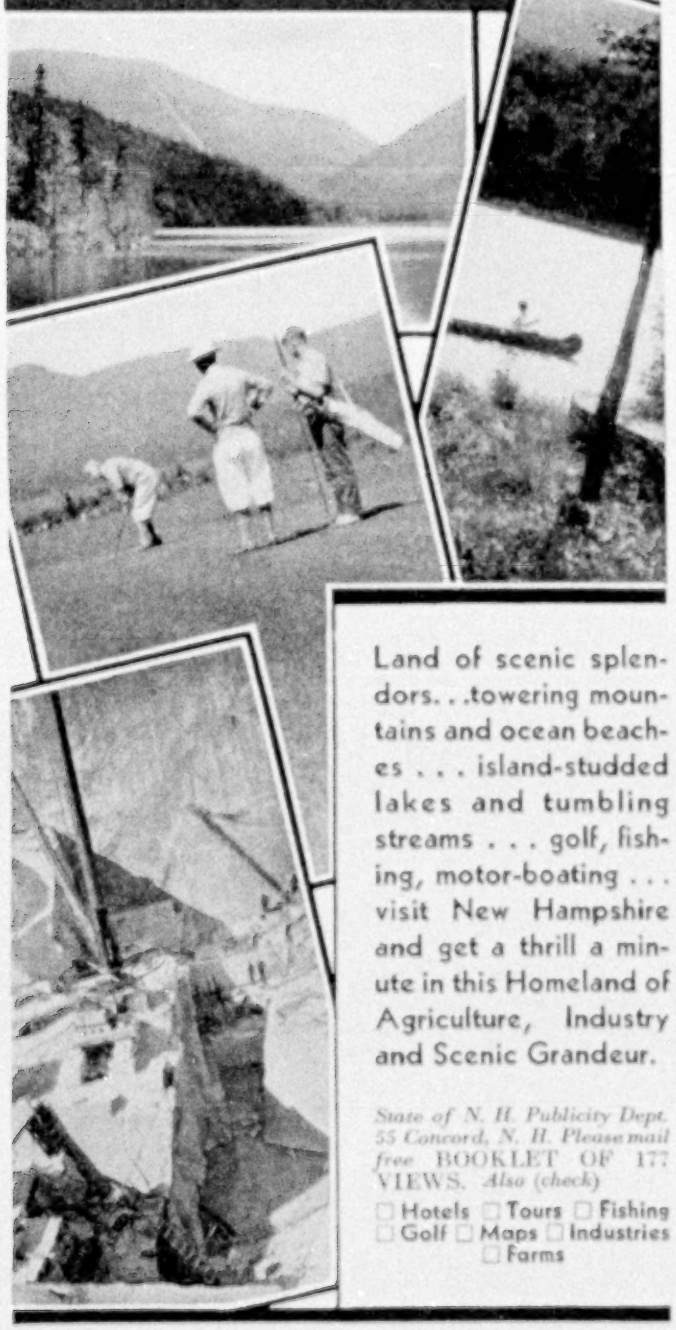

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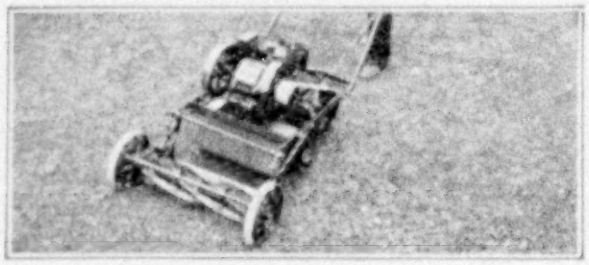

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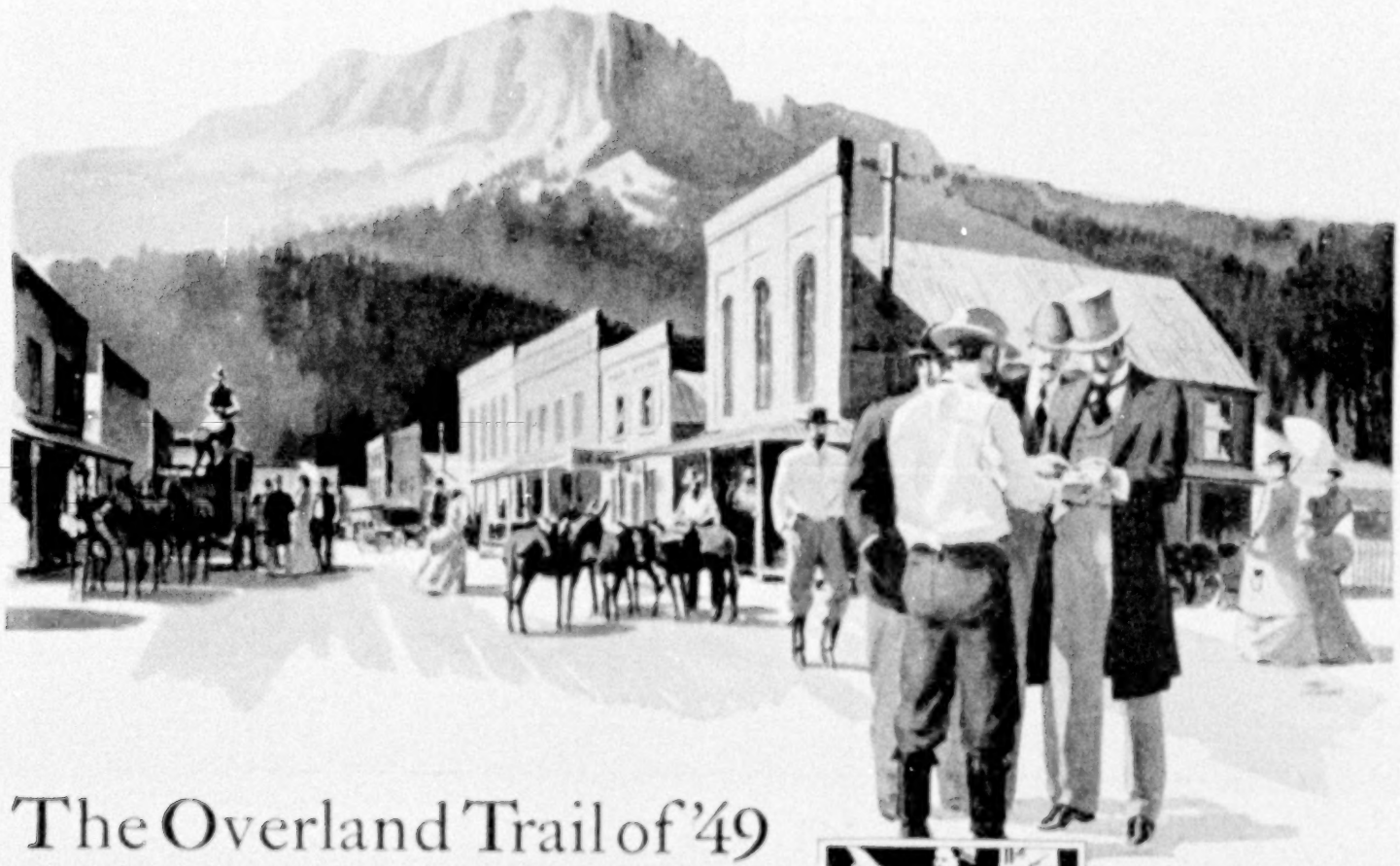

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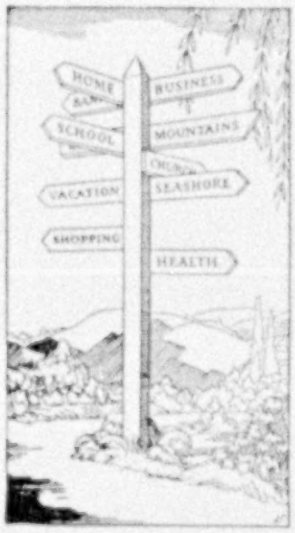

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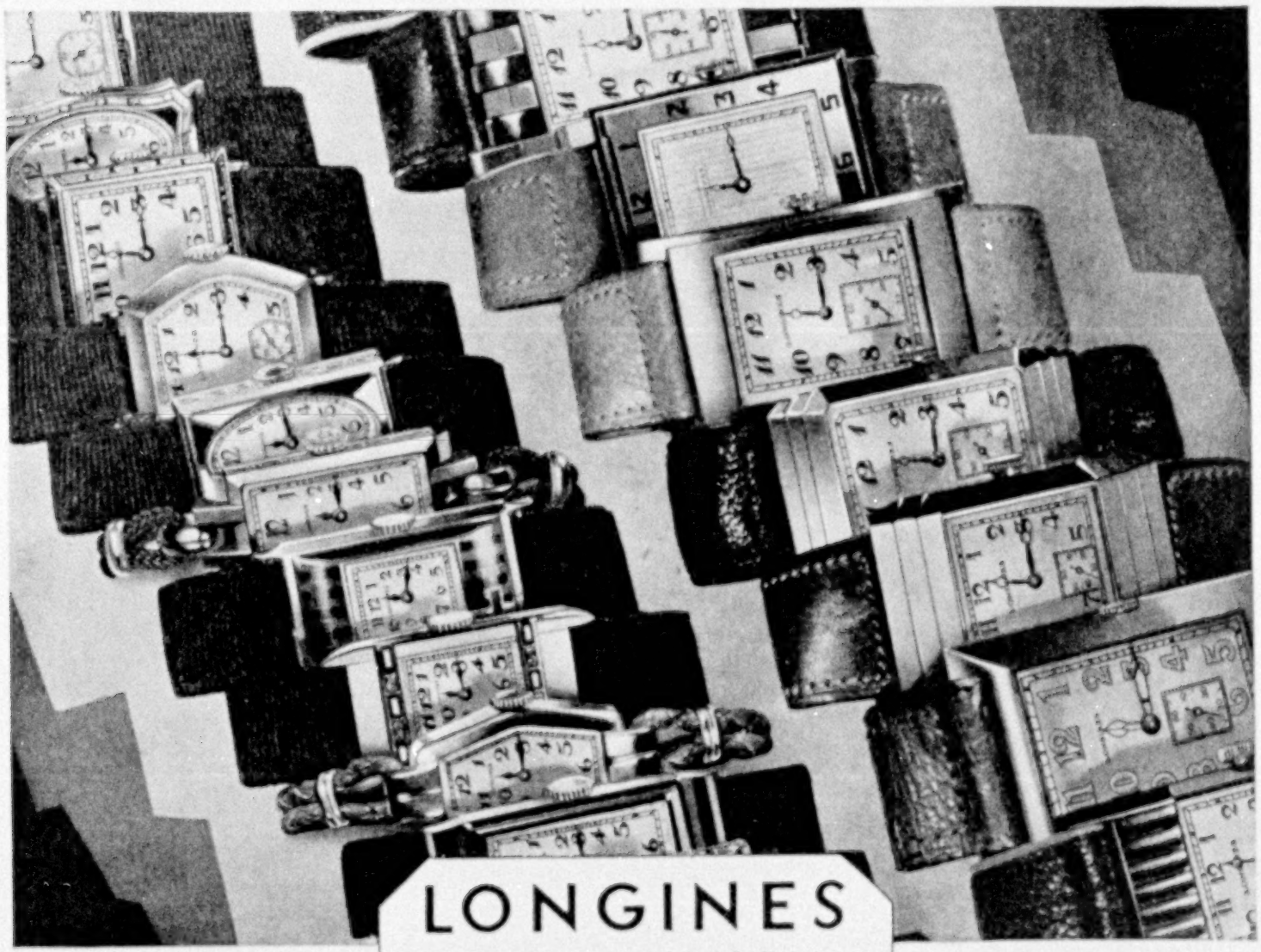

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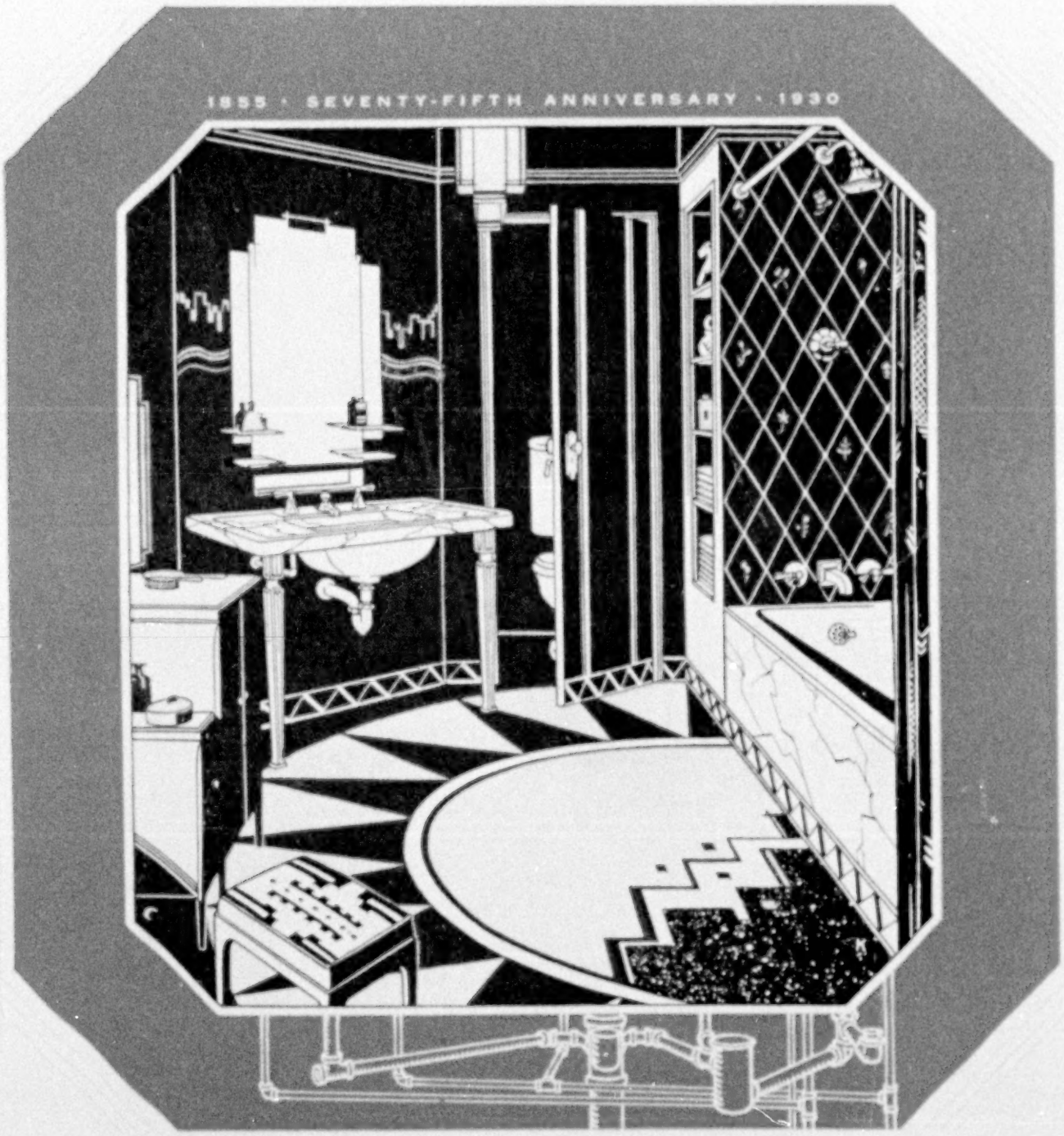

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